

COAL AGE

Volume 16

New York, August 28, 1919

Number 9

Consumers' Lockouts

BY R. DAWSON HALL



A FEW years ago employers' lockouts were common enough. Today public opinion will tolerate them only under most unusual circumstances. However, not all lockouts are the work of employers of labor. Quite frequently consumers make up their mind to refuse to buy in order to force down wages, or at least with the expectation that a lower wage rate will be obtained.

There was such a lockout on the signing of the armistice. Everybody believed that prices were going to fall and needed to be lowered, not only prices of commodities, but the prices of the labor by which those commodities were produced. As a result the public waited, and the workingman—the mine workers at least—became quite restive under the delay. Their feeling was not against the operator or the manufacturer, but against society in general, that it should ordain such a lockout, after demanding of the worker miracles of production.

Somehow society failed to realize that any obligation rested upon it. It has always bought when it would and desisted when it would. In the summer it bought at its pleasure and refused to put by its coal for the winter. The average citizen does not care much if the mine worker has only a half year's work, so long as he comes around and fills the coal hod in the winter.

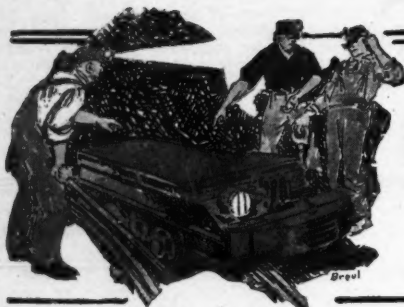
The consumer has been taught that he is an irresponsible sort of being, allowed to buy when he will and use what he buys as he will. There is no "Whole Duty of Man" written for him. Because, for him, no law or gospel had been written, he lets his duty slide, and the locked-out workingman accordingly thinks in terms of Bolshevism, wants double pay for every working day to make up for short time, seeks a

shorter day and fewer days a week to make the mine capacity fit the demand for coal, and longs for nationalization of industry in the hope that when it comes about the mine worker will be given steady employment. He overlooks the significant fact that, under the present railroad nationalization, the Railroad Administration has laid off shopmen even when railroad cars were being damaged more rapidly than they were being repaired.

Public opinion has ended the producers' and the manufacturers' lockouts, but the consumer still continues to maintain the right to use that weapon. However, not all the consumers' failures to buy should be reprobated. Sometimes he lacks the money to carry a stock; at times he is willing, but afraid to buy what may depreciate in price; at others he purchases but does it in another market, realizing that what he thought was a good article is exceeded in value by another. But, however justifiable his action may be, it leads to unrest.

Some day the larger corporations will order coal and make their improvements whenever the market gets weak, largely with the purpose of creating a stimulation that must inevitably in time return them large dividends. Idle time produces discontented men and means unused capital. The burden of a buying philanthropy of this kind will not be felt when many corporations attempt it; for the stimulation of industry will be so great that the trade depression, lower wages and lower prices will fail to materialize, and the thing purchased, the work done or the material manufactured will fetch in the market the money expended on it; while with the steady work resulting every one will be happier.

That country alone can be prosperous that continuously produces the wherewithal for material prosperity.



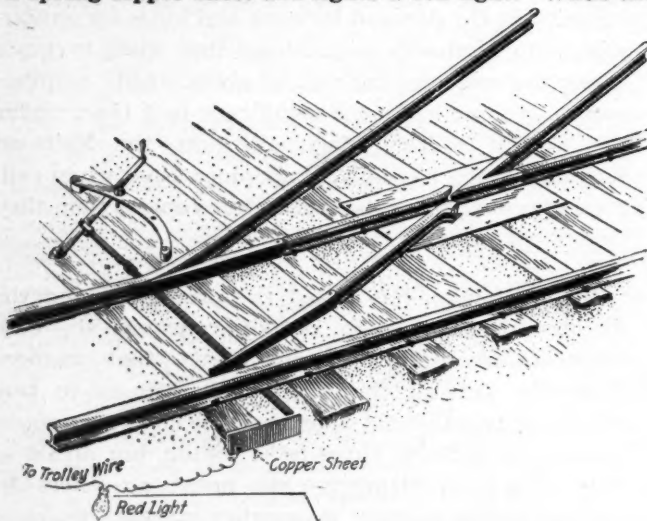
IDEAS AND SUGGESTIONS

PRACTICAL SCHEMES THAT MAKE THE DAY'S WORK EASIER

A Homemade Switch Throw

BY JOE POVICH
Ziegler, Ill.

The switch throw shown is homemade and is being used in conjunction with a light switch. When the switch is thrown over, the bridle makes contact with a spring-copper sheet and lights a red light. When the



DETAILS OF A HOMEMADE SWITCH THROW

switch is set for straight track the light is out. The light switch is mounted on a piece of fiber over which a 1-in. board is placed to cover and protect it from dirt and injury. The illustration is so comprehensive that no detailed description of the device is necessary.

When the Boss Loses His Control

BY OBSERVER

A successful mine foreman was made superintendent of a difficult colliery which had been turned back to the owners, through losses, in a poor condition. For a time his direction of the operation was a success, then a sudden series of mishaps occurred, fire and fatal accidents combined. Right here he seemed to lose his grip on the situation. He went down into a new shaft and took part in the actual manual labor of sinking. From then on his generalship lost its compelling force. He seemed unable to guide because he had left the wheel, and his resignation came as the logical outcome of a situation which developed through first stepping down from the place of authority.

Another man, now dead, was given a stripping foremanship which was an injustice to him. He was a fine miner and could not entrust the mining to the men hired to do that work. Working several lifts with little groups of men on each lift, his time would have been amply taken up supervising group by group, yet we

found him nearly always high up in the face drilling holes or hand-picking, while his men "bummed" safely out of his sight on the other levels. He worked very hard and wore himself out thereby, and with constant worry over the work. Finally he took a minor position with another company, but his broken health did not mend and he died before the allotted span.

Wages are high, in fact everything connected with mining is now costly. Yet no cry of this will find an appreciative audience from the general public. They will not believe that a colliery is not paying so long as the colliery continues operating. They reason that a coal company is too wise to play a losing game, and figure that a plant pays or it would close down. It seems that the day of swivel-chair superintendency, like telephone salesmanship, is done, and that where the colliery heads, from the big boss down, refuse to don overalls and "get next to the ground," costs will run up and swallow profits. We will likely see more intensive bossing in the paying mines of tomorrow. If the uncalled-for six-hour day comes, it will mean two shifts under pressure in order to get out the coal.

I have observed the night-shift work at different collieries, and it has never seemed to pay in the way that daylight work does. Night drivers are hard to get and they quit with painful regularity; in fact, it seems that nobody wants night-shift work. Everybody concerned tries to get done as quickly as possible simply because daylight supervision is withdrawn; if there is a handy manway, the shift ends at many queer times. Men will not be driven, and no sane mine executive expects to get work done that way; but if nobody ever sees the boss, and if the mine foreman's wife sees the "super" drive away early every day while her husband works twelve hours or worse, some one will ease up, then some one else, and so on, all the way down to the mule skinner. And that colliery will lose its morale and its ability to cope with ever-mounting costs. Long-range, white-shirt generalship seems doomed by the new demands of our time.

Homemade Voltmeter Switch

BY JOHN J. NOLAN
Linton, Ind.

The diagram herewith shows a three-way voltmeter switch to be used on the board when three generators are operated in parallel. I have two of these devices in use and they are working satisfactorily. Almost any mechanic or electrician can construct them, as only two pieces need to be machined or made in a lathe, these being the brass rings. If convenient, however, the fiber base should be turned also. The rest of the construction is not difficult.

The company with which I am connected had two plants using three generators in parallel, all old equipment such as is usually found around old coal mines.

Of course, two voltmeters were used, one being connected to one of the generators and the other to a double-pole double-throw switch on the other two machines. Usually meters in isolated plants are never calibrated, and switching generators together in this way is conceded to be bad practice.

The brushes under the arm or lever (not seen on main sketch) are of phosphor bronze spring ribbon. A small homemade fuse block was assembled on fiber and attached to the front of the board just under the three-way switch. This is single-pole, connected to the positive side only, and uses a small fuse. It offers protec-

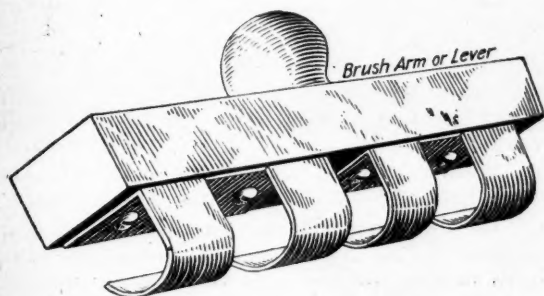
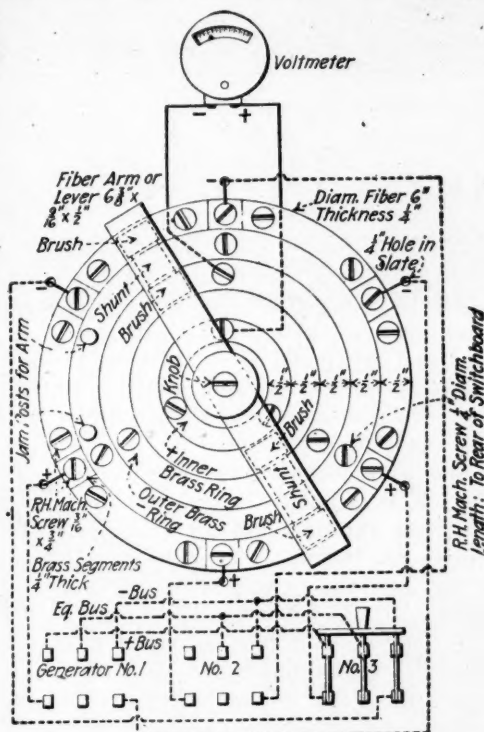


DIAGRAM OF THREE-WAY VOLTMETER SWITCH AND
DETAIL OF BRUSH ARM

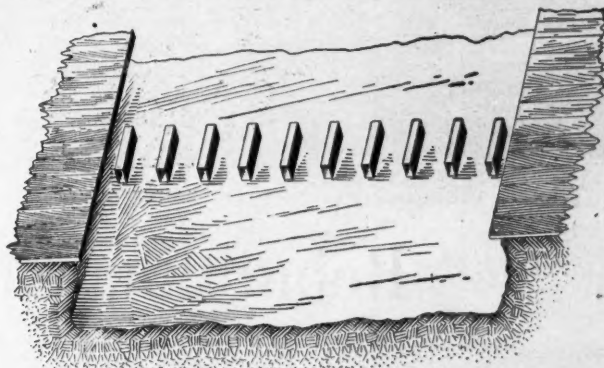
tion to the switch in case something should happen from rough usage. The main fiber base extends out from the slate about $\frac{1}{2}$ in. Short pieces of $\frac{3}{8}$ -in. pipe were placed on the long bolts which go through the board, so as to enable one to easily connect or disconnect the wires leading to the switch studs and meter. By leaving some slack in the wires on the rear of the board and loosening the three bolts, the switch can be pulled out to adjust the tension of the brushes on the rings.

A DISPATCH from London says that Great Britain will be more than 1,000,000 tons short of her expected shipbuilding program this year, which was to have been 2,500,000 tons, according to estimates.

Stepping-Stone Street Crossing

BY RALPH W. MAYER
California, Penn.

Some mining towns do not boast paved or macadamized streets. Slabs of stone laid flat and extending across the street soon become covered with mud, and it is then necessary to wade in order to cross the street from one side to the other. In order to obviate this difficulty a certain coal company in West Virginia uses



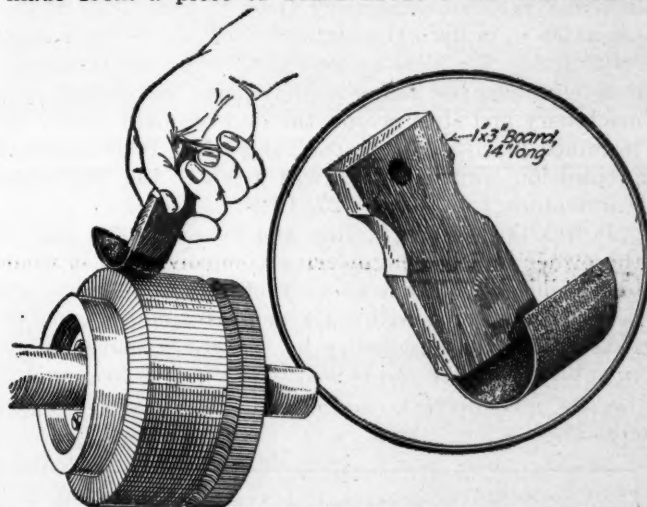
MAKES EASY WALKING ACROSS MUDDY STREETS

heavy slabs of stone, about 4 ft. square and 6 in. thick. These are set on edge and buried, all except about 8 in. to 1 ft. The slabs are placed about 2 ft. apart, so that horses and the wheels of wagons can pass between the stones. A person may cross the street dryshod by stepping from one stone to the next, since the travel of the horses and wagons never drags the mud to the level of the top of the stones.

Handy Sandpaper Holder

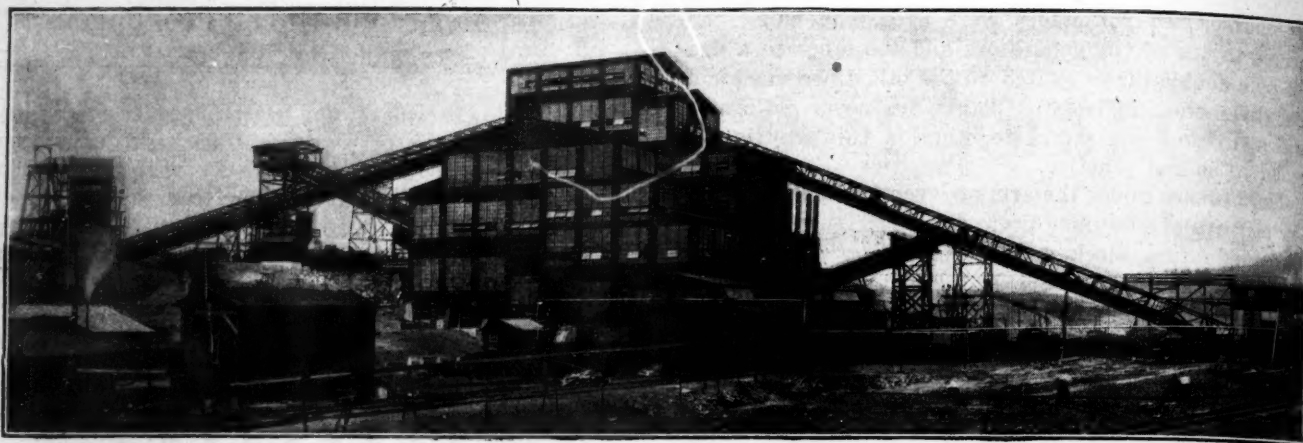
BY ELECTRICIAN
Ziegler, Ill.

The accompanying illustration shows a device for holding sandpaper while sanding or polishing commutators on motors, generators or other machinery. It is made from a piece of board about 3 in. wide and 14



DEVICE IS HANDY FOR HOLDING SANDPAPER WHEN
POLISHING COMMUTATORS

in. long, with a suitable slot cut in one end. The handle or upper end of the holder may be made in any desired shape. For convenience, however, it may be advantageously provided with a hole or some other means whereby the device may be hung upon a nail or some convenient hook.



VIEW OF THE LOREE BREAKER TAKEN AFTER IT HAD BEEN REBUILT FOLLOWING A FIRE

Rebuilding the Loree Breaker

BY W. S. HUTCHINSON
Bethlehem, Penn.

ON THE 22d day of January, 1919, the Loree coal breaker of the Hudson Coal Co., located near Larksville, Penn., was burned to the ground. Nothing was left except a tangled mass of rubbish and old iron. This was a 4000-ton breaker, and the catastrophe came at a time when it was running full. In view of the fact that this structure handled the output of a number of shafts in its immediate locality worked by this company, and prepared a fine quality of coal comparing favorably with the best premium anthracite on the market, the officials of the Hudson company felt constrained to take immediate and heroic measures to effect the replacement of the burned breaker.

By a peculiar coincidence, without consultation between the two, both the Scranton operating office and the New York executive office got into communication with the Bethlehem Fabricators, Inc., within a few hours of the fire, requesting them to send their representative to go into the matter of replacing the burned structure with a steel breaker. After a few days spent in preliminary estimates and preparation of tentative machinery and steel layout, the coal company finally determined to go ahead on the basis of a structural steel proposition, and the order was given to the Bethlehem Fabricators, Inc., on Jan. 27, 1919.

It was the general feeling and belief, on the part of the owner and the engineering company, that it would be possible to complete this structure so that coal could be shipped from it within six months' time. It was believed to be the best policy by the owner, nevertheless, to publish the determined length of time as five months. To that end, therefore, a monster sign was placed on the site, reading as follows:

A new 6000-ton-per-day steel breaker in five months!
We hope with the help of everyone on this job to have the breaker running on or before June 22, 1919, and thus give employment to all the former force at Plymouth. January 22 to June 22—150 days.

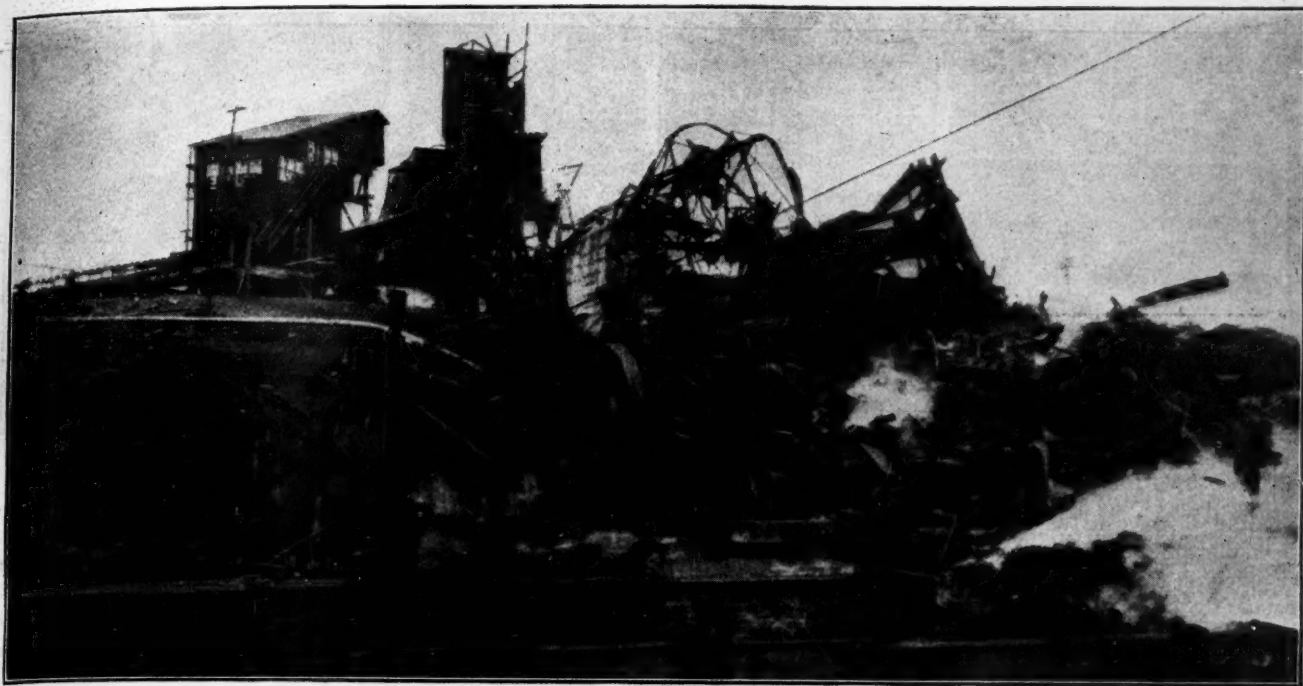
A space on this sign was left for the insertion of figures to represent the number of days remaining before the completion of the five-month period. The

breaker was completely finished and coal shipments started and continued from then on, 20 days ahead of the 150-day limit. As the sign then stated, "With the help of every man on the job we did it in 130 days—Thank you."

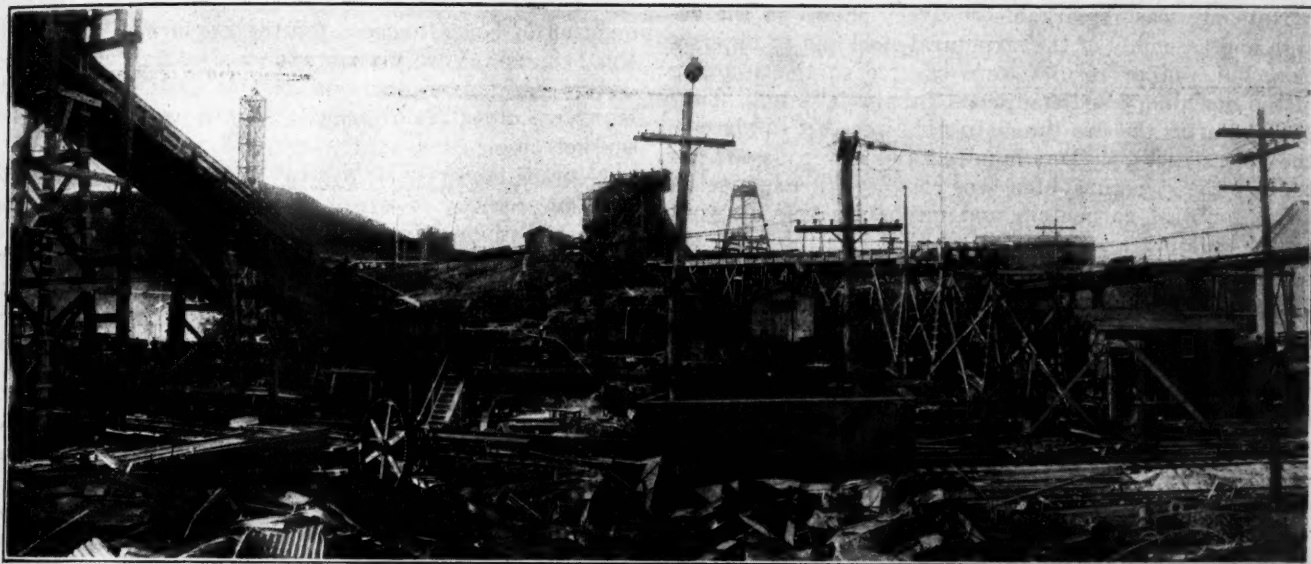
Before giving the salient points of the construction of the job, it might be interesting to note the comparison between the new and old breakers. These were in the main as follows: The old breaker shipped 4000 tons per day, the new breaker has a 6000-ton-per-day capacity. It has 36 Lehigh instead of 11 Lehigh and 21 Simplex jigs. It has 56 decks of main shakers as against 42 in the old breaker; four decks in each building were designed to handle lump. Each building was provided with one set of main rolls and one set of No. 3 rolls, but the new breaker has two sets of No. 2 rolls against one set of No. 2 rolls in the old building. The old breaker had one 500-hp., two 200-hp. and one 150-hp. engines, while the new breaker has none. The old breaker had one 200-hp. and five 75-hp. motors, making the total motor horsepower 1450. This means that the old breaker had a total of 1625 hp. in engines and motors as against 1450 hp. in the new breaker. The old structure had one 360-ft. and one 363-ft. main conveyor. The new structure has one 328-ft. and one 395-ft. conveyor. The new breaker is equipped with two Manierre box-car loaders and two Jeffrey pulverizers, the same as the old one. There was no provision for recovery of fine coal in the old breaker, but in the new structure a stirring separator and storage conveyor have been installed.

Prompt action was taken on the part of the coal company to clear the site of the new structure, and 11 days after the fire all debris was entirely cleaned up. A concrete tower was then erected and arrangements made to carry on the installation of the plain and reinforced-concrete mats and the footings for the steel frame by day and night. Unusually open weather for the time of year permitted the work to go along without interruption, although preparations were made to cover over the site or maintain heat, if necessary, in order to permit continuous work on the footings.

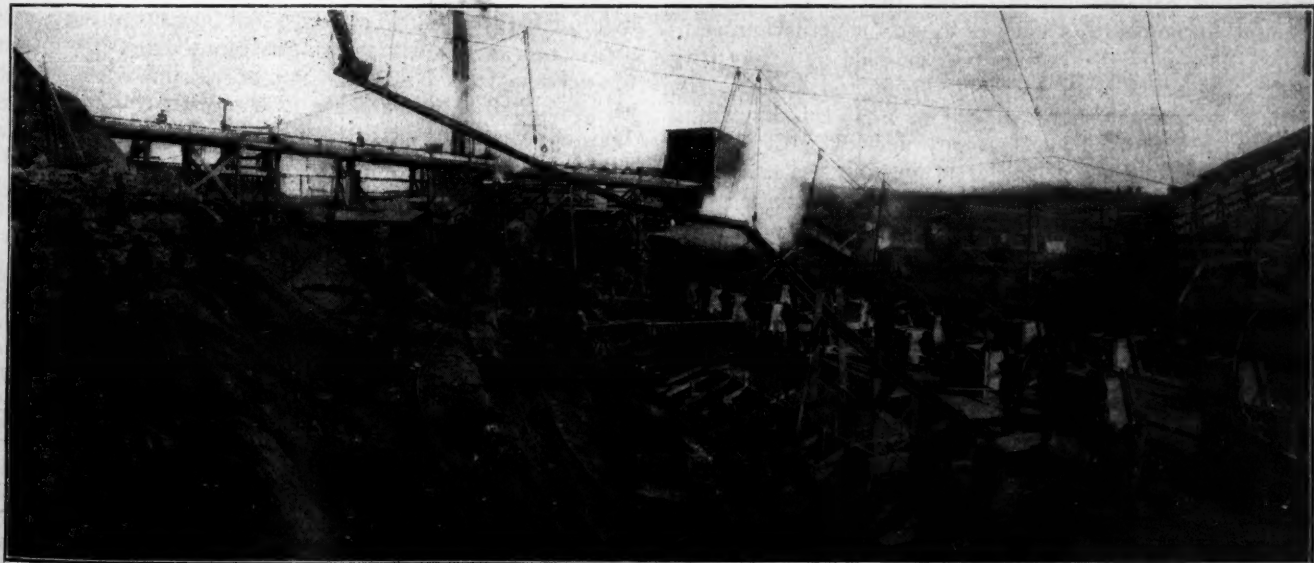
Final concrete forms were in place 33 days after the



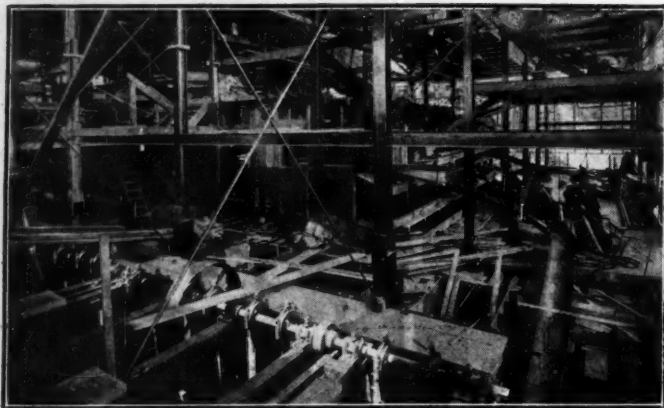
HOW THE BREAKER LOOKED TWO DAYS AFTER THE FIRE—NOTHING BUT RUBBISH AND OLD IRON



ELEVEN DAYS AFTER THE FIRE THE BREAKER SITE WAS CLEARED AND CONCRETE TOWER ERECTED



TWENTY-SIX DAYS AFTER THE FIRE EXCAVATION AND POURING OF CONCRETE FORMS BEGAN



JIGS AND PICKING TABLES IN OPERATION 130 DAYS AFTER THE FIRE

fire; and 47 days after the fire the steel framework for a considerable portion of the structure was not only on the ground, but the roof over the loading tracks was practically completely erected. Eighty-two days after the fire the building was completed, although the up-hill conveyor was not completely installed because of the fact that to keep up continuous working of the up-hill shaft the old wooden conveyor was still in operation.

Not only was remarkable efficiency shown in the design and assembly of the structural steel and in its erection, but similar results were effected in the securing of the machinery and equipment for the building. Thus 96 days after the fire the main rolls were set in place in the new structure. One hundred and eleven days after the fire the structural steel was complete throughout. A large force of carpenters and mechanics was at work on the building from the moment that riveting was completed in order to enable the other workmen to install the equipment. The illustration of the east side jigs and eccentrics for the front jigs on the lower level, taken 117 days after the fire, will give an idea of how closely the machinery installation followed up the work of erection. The entire building was finished and heated 130 days after the fire. There have been upward of 2100 mine cars of coal put through this breaker per day on a number of occasions since it was started.

It might be mentioned that there is approximately 1150 tons of material in this breaker, that the furnishing and erection of the steel work was done on a bonus and penalty contract, and that a considerable amount of bonus was earned by the contracting company. The work of erection was handled by a Bay City locomotive crane with an 80-ft. boom and a 25-ft. jib, with a 40-ton capacity, as well as a 15-ton Browning hoist with a 60-ft. boom. A guy derrick with a 79-ft. boom was also used in the erection, and the conveyors were hung into place with a stiffleg derrick.

The actual erection of steelwork was started on Mar. 5 and completed on Apr. 19. There has never been a record of this character made in coal-breaker construction, and only close coördination of efforts and interest on the part of both the owner and the contracting company accomplished anything like the results shown in the erection of this building, with its complement of coal-preparing machinery.

Texas has an area of lignite of nearly 60,000 square miles—an area nearly as large as the State of Missouri and somewhat larger than the area of the New England states.

Coke Industry in South Africa

Most of the Natal coals and much of the coal found in the Central Wirbank district of the Transvaal yield good serviceable coke, well adapted to blast furnace and foundry purposes, although unfortunately as a rule rather high in sulphur. Until the middle of 1918 only two companies were producing coke, but recently as a result of the increased demand for coke created by the erection of blast furnaces for the production of iron at Pretoria and Vereeniging and in Natal, the coke industry has undergone considerable expansion and at least five other Natal companies will shortly enter the market.

None of the ovens at present in operation is designed for the recovery of byproducts. War conditions again have had their effect in stimulating enterprise. The embargo placed on the export of coal tar from the United Kingdom has caused a shortage and sent up prices in the Union, and another effort is being made at Wirbank to produce coke, tar, ammonium, sulphate and benzol, while as soon as the requisite equipment is available a large byproduct recovery coking plant is to be erected at Dundee. If successful, there is no doubt that the installation of these plants will be followed by others.

One of the most important developments that have taken place in recent years in the South African coal industry has been the erection in Natal of a large modern plant of the Mond type for the production of ammonium sulphate. At the present time the output is at the rate of about 250 tons per month, and it is hoped to increase this to 350 tons in the near future. Most of the ammonium sulphate is exported to Mauritius. The industry appears to be capable of very considerable expansion, as there are other coals in this and the adjoining districts of Natal which are equally well adapted to coke manufacture.

CONSIDERING that comparatively a small part of the energy in coal is utilized in the steam engine, why should fuel be transported long distances to power stations when electric transmission lines 100 miles in length are in common use? Transmission lines up to 250 miles in length exist and are practical. But suppose a 200-mile radius be taken as a possible standard for the limit of electric transmission. Then circles with that radius drawn around centers of coal production will include a considerable portion of the industrial territory of the country. Thus the power demand of a large area could be supplied by wire rather than by rail from the coal fields. Incidentally a large amount of railroad equipment would be released for other purposes.

BY E. STECK
Hillsboro, Ill.

[illegible]

In the case of an old mine where it is desired to install cutting machines, haulage and gathering motors, and to electrify the top equipment, the question naturally arises where purchased power is available whether to use it or generate electrical energy. In considering purchased power it is highly important to determine how free from interruptions the service will be. If the service is bad, causing frequent idle days, no matter how cheaply it can be obtained it is a losing proposition. A shutdown of a single day during the busy season will

TABLE II—COSTS FOR MINE No. 4

	Tons	Total, Kw.-Hr.	Cost of Power			Cost in Cents per Kw.-Hr.			Kw.-Hr. per Ton	Cost per Ton Cents
			Prim-ary	Second-ary	Total	Prim-ary	Second-ary	Total		
1918										
July..	50,282	50,000	\$375	\$765	\$1,140	\$0.75	\$1.53	\$2.28	0.99	2.27
Aug..	44,486	45,200	375	697	1,072	.83	1.54	2.37	1.02	2.42
Sept..	40,083	43,200	375	666	1,041	.87	1.54	2.41	1.08	2.61
Oct..	46,100	46,400	375	705	1,080	.81	1.52	2.33	1.00	2.33
Nov..	38,292	43,200	375	656	1,031	.87	1.52	2.39	1.13	2.70
Dec..	28,401	33,200	375	513	888	1.13	1.54	2.67	1.17	3.13
1919										
Jan..	20,451	32,800	375	502	877	1.14	1.53	2.67	1.60	4.28
Feb..	18,176	31,600	375	482	857	1.19	1.53	2.72	1.74	4.72
Mar..	20,101	26,400	375	442	817	1.42	1.67	3.09	1.31	4.03
Apr..	16,553	24,180	343	405	748	1.43	1.67	3.10	1.45	4.51

cause greater losses than any saving that may result from the most economical operation during the remainder of the month.

The next point to be considered is the primary rate or, in other words, the method of measuring the maximum demand and the price per kilowatt-hour therefor. Generally, the primary rate charge is based on the average of the three highest short-time peaks which have occurred any time previously in the twelve months during which the power is consumed. These peaks naturally occur at a time when the mine is producing its maximum output. Then, when the mine is working on short time or is shut down, this charge remains in effect for twelve months after it has occurred. By referring to the accompanying tables it may be seen how this primary charge is increased per kilowatt-hour as the production of the mine drops.

The charge for the maximum demand was originally made on the basis that for every kilowatt of maximum demand that the consumer created the central station was required to have ready for his use a kilowatt of station capacity. This kilowatt of capacity was estimated at an installation cost of \$100, and the fixed charges amounted to 15 per cent. per year, or \$1.25 per month. On careful investigation it is doubtful if there is any justice in this charge. It is not fair to the consumer and is one of the greatest stumbling blocks for the central station in obtaining and holding a mine load. There is no room for argument in regard to the \$100 cost per kilowatt of station capacity installed or the 15 per cent. charge for depreciation, taxes and interest, but there is a wide discrepancy between the sum of all the consumer's maximum demands and the normal rating of the station capacity. The station equipment is generally purchased with a continuous or an overload capacity rating. The maximum demand is measured on a 5 or 15 minute peak with no consideration given to the diversity factor; that is, all the maximum demands for the various loads carried by the central station do not occur at the same time.

As a rule the day and night load are of an entirely different character. The maximum demand should be greatly reduced. For example, at a certain mine the maximum demand on the basis of the average of three 5-minute peaks was measured by the power company as

400 kw. When the service was down the same load was carried by a 200-kw. engine-driven generator. It should be borne in mind that the maximum reading was taken on the alternating-current side of a motor-generator set and the direct-current output was at that time only 80 per cent. of 400 kw. It must also be remembered that the central station in carrying this load has the advantage of the diversity factor mentioned above.

If the central station does not derive sufficient revenue with a reduced primary charge, the secondary charge should be increased. Referring to the tables again, it will be seen that there is a large variation in the primary rate per kilowatt-hour, the maximum being about three times the minimum, depending on the output of the mine, while the secondary rate per kilowatt-hour remains nearly constant. In a large mine the primary may be over \$1500 per month even with the mine shut down, and for a period of months.

If a contract is given a central station for service, the primary rate should have most careful consideration. A competent engineer should be employed to investigate conditions, to determine whether power can be bought or generated to advantage. Much depends on the average daily output in relation to the maximum daily output, the rate offered by the central station (both primary and secondary), the type and capacity of boilers, engines and generators, and the additional men required to operate the equipment.

Often a small electrical unit can be installed without increasing the boiler capacity or employing additional men. The electrification of the top machinery will release considerable boiler capacity and the electrician winding armatures, etc., can be located in the generator room. With such conditions the investment and operating charges will be small, and it will be difficult for the central station to make a rate which will be lower. On the other hand, the addition of such a unit may require additional boilers, stacks, buildings and men. The cost of production here may be higher than the price at which power can be purchased.

No general rule can be given in regard to whether it will be advisable to purchase or generate power, as in each case the conditions are different. The decision should be made by a competent engineer after a careful

TABLE III—COSTS FOR MINE NO. 14

	Tons	Total, Kw.-Hr.	Cost of Power			Cost in Cents per Kw.-Hr.			Kw.-Hr. per Ton	Cost per Ton Cents
			Prim-ary	Second-ary	Total	Prim-ary	Second-ary	Total		
1918 Hoisted										
July..	69,462	56,855	\$340	\$405	\$745	\$0.60	\$0.71	\$1.31	0.82	1.07
Aug..	68,046	33,366	395	273	668	1.20	.81	2.01	0.49	0.98
Sept..	52,858	49,694	395	411	806	.80	.83	1.63	0.94	1.52
Oct..	63,465	30,260	395	266	661	1.31	.88	2.19	0.48	1.04
Nov..	41,131	23,279	395	198	593	1.71	.85	2.56	0.57	1.44

study of the existing conditions at the mine, the proposed future development and the power rate of the central station.

With a new mine the conditions are simplified, as it is possible to make more accurate comparisons. The ultimate daily maximum capacity is the determining factor in the cost of power and the type of equipment, whether power is purchased or generated. The fixed charges on the power-plant equipment consisting of interest, depreciation, taxes and insurance should be compared with the primary charge and the expense for coal, oil, repairs, firemen, engineers, etc., compared with the secondary charge. These comparisons should be made for maximum and average daily output and idle days.

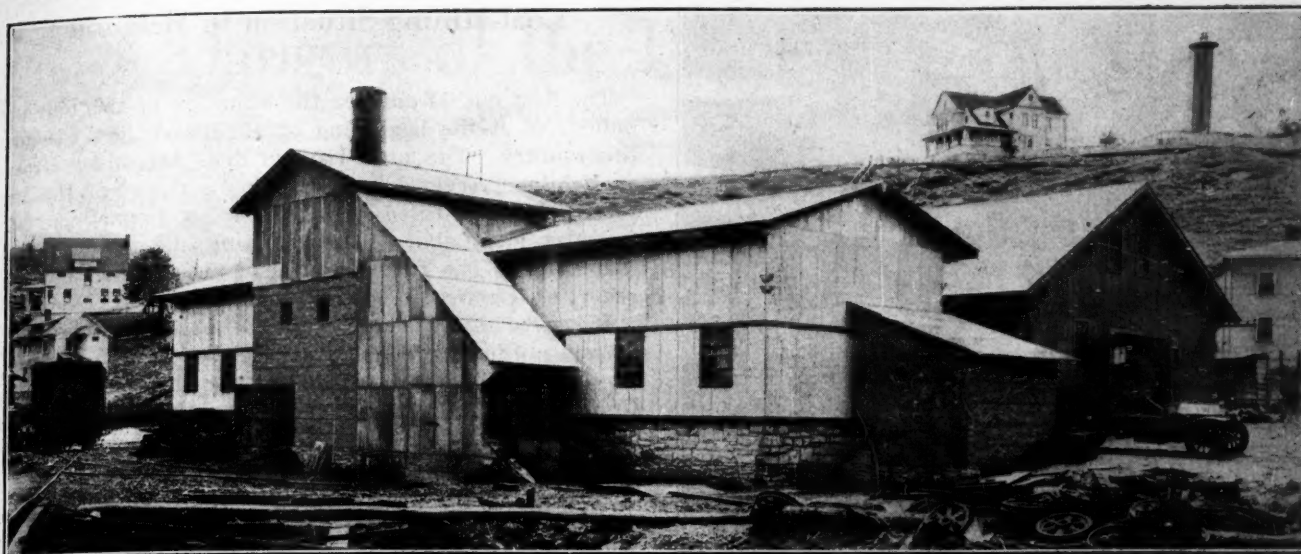


FIG. 1. GENERAL VIEW OF THE FOUNDRY BUILDING AND ITS SURROUNDINGS

A Foundry at a Coal Mine

By A. A. LIGGETT
Cincinnati, Ohio

THE Raleigh Coal and Coke Co., with general offices in Cincinnati, Ohio, and mines in the New River district, has recently installed a foundry at Raleigh, W. Va. While small castings of brass, copper, bronze or even iron made at not a few mining plants, a full-fledged foundry like this one is decidedly out of the ordinary.

Fig. 1 shows a general view of the foundry building and its surroundings. The cupola may plainly be seen rising through the roof of the building, which is served from outside by means of the skip or special car running on the inclined track. Thus the coke and iron used for a charge is hauled up to the charging floor electrically. A railroad sidetrack connects with this skipway.

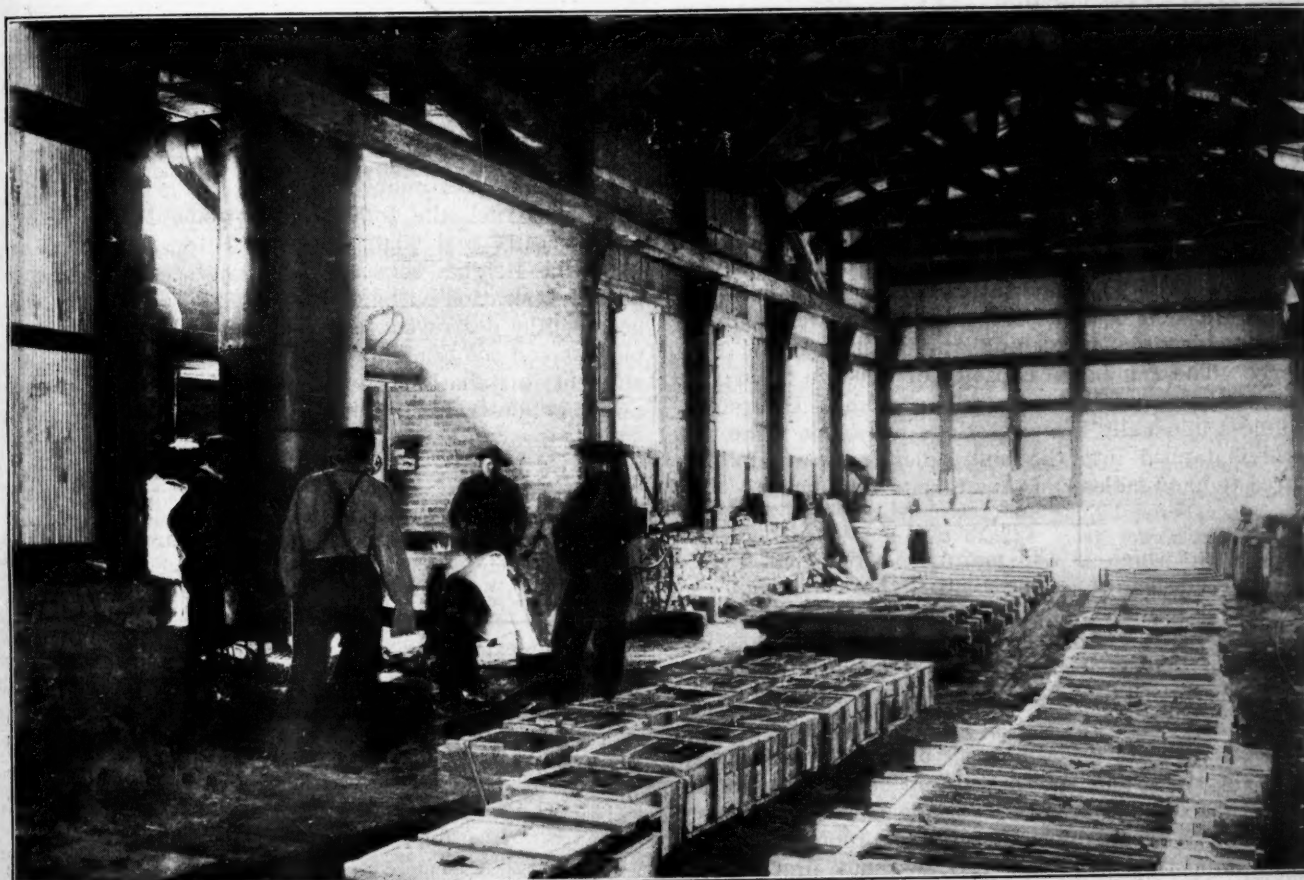


FIG. 2. INTERIOR VIEW OF FOUNDRY, SHOWING THE POURING OF MOLTEN METAL

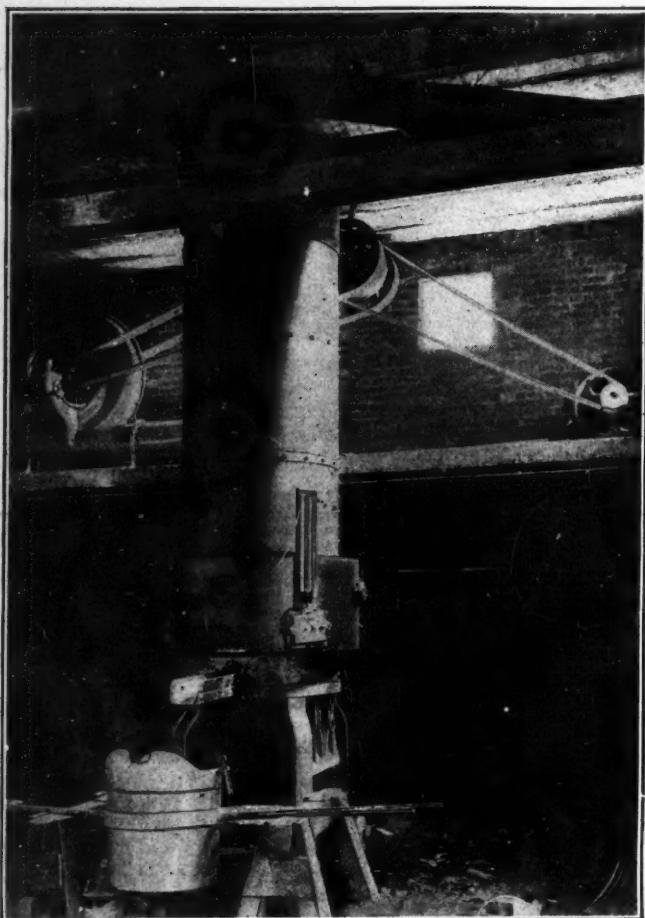


FIG. 3. VIEW OF CUPOLA AND MOTOR FURNISHING BLAST

At the right of the building may be seen the core oven and annealing pit, where hard castings may be annealed. All castings used in and about the mine plant are made in this foundry.

Fig. 2 is an interior view of the building while molten metal is being poured from the "bull ladle" to a hand ladle by which it is transported to the waiting molds. This illustration affords a good idea of the construction of the building.

Fig. 3 shows the cupola, which averages 10 lb. of iron melted per pound of coke consumed and has a capacity of from 3 to 5 tons of iron per hour. The blower, counter-shaft and motor furnishing the blast may be seen clearly. The fan has a capacity of 2000 cu.ft. of free air per minute, while the motor is of 30 hp. Ordinarily, or unless unusually heavy castings are to be made, the metal is tapped into the bull ladle, from which it is poured to hand ladles and thus taken to the molds.

The soot, which is the main constituent of visible smoke, is formed at, or very near, the surface of the fuel bed and not at the place where the furnace gases strike the heating surfaces of the boiler. The heating surfaces merely cool the gases surrounding the soot, thereby preventing its combustion. The formation of soot at the surface of the fuel bed is caused by the high furnace temperature and absence of oxygen. It is possible that if oxygen was present in sufficient quantity at the time of distillation of volatile matter, the heavy hydrocarbons would burn directly to products of complete combustion, CO_2 and H_2O , without first decomposing and depositing soot.

Coal-Mining Situation in Belgium in 1919

The first official data on the situation of the Belgian industries at the beginning of 1919 have just reached this country. The latest issue of the *Annales des Mines de Belgique* received here contains a report of the investigation instituted by the Belgian Department of Industry and Labor of some mining and metallurgical industries.¹ The following is a short abstract of this report as it refers to the coal industry:

It can be said that of all the Belgian industries that of coal mining suffered the least from wanton destruction. This is explained not by the thought that the Germans had any consideration for the Belgians' and

TABLE I—COAL PRODUCTION IN BELGIUM, METRIC TONS

Year	Mons	Centre	Charleroi	Namur	Liege	Total
1913.....	4,406,550	3,454,640	8,148,020	829,900	5,998,480	22,841,590
1914.....	3,578,840	2,701,550	5,764,410	534,180	4,135,070	16,714,050
1915.....	3,310,200	2,573,430	3,875,690	410,660	4,007,520	14,177,500
1916.....	3,705,540	3,212,860	5,223,970	497,150	4,223,350	16,862,870
1917.....	3,869,680	2,785,400	4,671,240	437,870	3,155,510	14,919,700
1918.....	3,281,720	2,559,610	4,493,630	374,440	3,112,530	13,821,930

their coal industry, but by the fact that during the first four years of the war they treated the coal mines as theirs, and only the lack of time during the last few months of the war saved the Belgian mines from the fate suffered by the mines of northern France. The mining situation is best shown by Table I, which gives the production for 1913 to 1918 by coal districts and totals.

In the new coal district of Campine, which was ready to start actual mining Aug. 4, 1914, and from which

TABLE II—COKE PRODUCTION IN BELGIUM, METRIC TONS

Year	Hainaut	Liege	Other Provinces	Total
1913.....	2,220,180	877,130	445,690	3,523,000
1914.....	1,406,460	595,210	?	2,001,670
1915.....	424,460	90,140	?	514,600
1916.....	667,530	124,820	?	792,350
1917.....	648,210	27,830	?	676,040
1918.....	509,150	13,060	?	522,210

the Belgians reasonably expected to get the needed additional fuel, the total mining amounted to 11,640 tons in 1917 and 65,670 tons in 1918.

Of the Belgian coke ovens it is stated: Some have been in operation without the needed repairs, some have been totally destroyed (especially those of the Cockerill plants) and the remainder have been totally dismantled, and the installations for byproduct recovery carried away or destroyed. The results of this policy are

TABLE III—BRIQUET PRODUCTION IN BELGIUM, METRIC TONS

Year	Hainaut	Namur	Liege	Other Provinces	Total
1913.....	1,864,200	171,010	453,350	120,000	2,608,640
1914.....	1,371,480	128,730	299,490	?	1,799,700
1915.....	968,470	135,220	386,410	?	1,409,100
1916.....	1,300,850	166,710	468,260	?	1,935,820
1917.....	707,690	70,130	204,110	?	981,930

shown in Table II, which gives the production, 1913-18, by provinces and totals.

The Belgian railways use briquetted fuel exclusively, which accounts for the fact that the briquetting plants were in most cases unharmed. Table III gives the production for 1913 to 1917 by provinces and totals.—*Chemical and Metallurgical Engineering.*

¹La situation des Industries en Belgique, en février 1919, après les dévastations, allemandes. *Annales des Mines de Belgique*, 2ème livraison, Tome XX, 1919, pp. 695-711.

Dangers of the Postal Zone Law

BY SENATOR ARTHUR CAPPER
Kansas

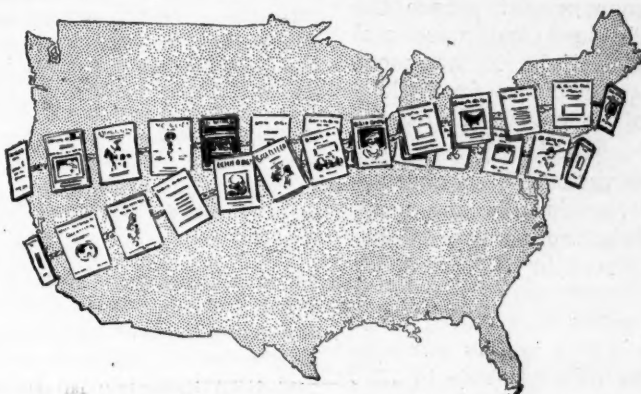
THERE is no function of government that reaches every citizen and every home to the extent of our United States postal service. For over seventy years the history of our postal legislation shows that our country has not legislated for postal service on the basis of cost, because the postal service is of such universal benefit, is such an instrument of information and education and unification, that to restrict it in any way is to hurt the country that we as thinking citizens wish to serve. So clearly and firmly has this American postal principle been held—that postage cost must not determine the postage rate—that our post-office has delivered letters and publications to Yankee whaling ships at Point Barrow in the Arctic Circle for two cents that cost over \$5.60 to deliver. I would ask any thinking citizen if it is not just as important that a Yankee skipper home from a whaling cruise shall be able to understand and vote intelligently upon the great public questions of the day as it is for the citizen who has stayed at home? This principle is sound. Shall not California, Kansas and Maine, as integral parts of this great country of ours, have equal postage on all information as an American right?

Our rural free delivery system—the most expensive and least revenue-producing branch of the post-office—costs 1½ cents per piece of mail matter, and this 1½ cents is over and above the cost of collecting, sorting, handling, transporting and rehandling until it gets into the rural free delivery carrier's wagon. This has all been done upon the American postal theory that the post-office function was a service to the American people and that the cheapness of postage was a benefit to the American home.

IT has been alleged—and maybe some have fallen victim to its un-American and illogical absurdity—that cheap postage on magazines and newspapers is a subsidy to the publishers. It is not a subsidy to the publishers. It is, if you want to use the term "subsidy," a subsidy to American readers. You can determine this for yourself. Who receives the benefit or subsidy when the Yankee skipper of a whaling ship off Point Barrow, in the Arctic Circle, receives news from home which costs \$5.60 to deliver? Is that a subsidy to his home newspaper, his periodical or magazine, or is the benefit of that to the ship captain himself and his citizenship and our united and national standards of intelligence?

You will instantly recognize that it is this ship captain receiver of costly postal service who is benefited, and your common sense will instantly prove to you that in every case of cheap postage the primary and entire benefit is to the receiver.

Cheap postage on periodicals and newspapers has made the American nation a nation of readers beyond any nation in the world. If there is any thought in your mind that this is not a national benefit, I ask you to compare in your mind this great country with its splendid and homogeneous American idealism, its singleness of purpose and the universality of its achievements



American magazines—technical and popular—bind together the people of the United States, making this country truly "one and indivisible"

with those nations in the world in which there is but little magazine reading.

NOW as a practical proposition. You know the economic law that all costs must ultimately be paid by the final consumer, i. e., in this case the reader. To raise the postage on publications means that the publishers, as business men, must add this charge to the price of their periodicals—and thus lessen reading. Is this a good thing? And again I ask every reader to consider those nations in the world which have never encouraged widespread reading nor the widespread distribution of periodicals and newspapers, and to answer that question. For it is one which I and other legislators in Congress have to face and with which we must deal.

This country had a postal zone system at one time, applying to letters and newspapers and periodicals. The abolition of the zone system was made complete by President Lincoln in 1863, and the zone system was abolished not only on periodicals and newspapers, but also on letters, because it was regarded as an unsound postal policy and un-American that a citizen or home should have to pay more postage simply by an accidentally greater dis-

tance from the point of mailing. The postal service is an American service from all Americans to all Americans on a basis of equal postage and equal service. I ask every reader to consider for himself if this is not sound Americanism.

NOW on the practical side I wish to point out that the country newspapers have circulation in their county of publication without any postage charge whatsoever, and this can only be justified and continued on our American theory that the postal function is an equal service to all American homes.

It would be obviously unfair for those supporting the postal theory that the cost must determine the rate of postage to ask that a letter costing 1½ cents for delivery alone on rural routes should be sent for one cent. I do not have to be convinced that we should have one cent letter postage. I am for cheap postage as a great American social service. I believe that every right-thinking American is for cheap and equal postage. But there is no logical reason for believing that the rate on one class of postal matter must be determined by the rate on another class of postal matter. The figures of postal cost upon which this unsound and un-American postal cost theory is demanded were compiled in 1907 and upon being investigated by the United States Postal Commission headed by Hon. Charles E. Hughes, these figures were discarded as utterly unreliable in determining the cost of handling newspapers and periodicals. Yet it is upon these discarded cost figures that such unsound arguments are based.

IF WE must abolish postal service—or increase postage rates to a prohibitive basis—on the theory that cost of service shall determine the postage rates, we should have to abandon many of the most important of our postal functions, the rural free delivery being the most conspicuous example and one which I believe should be kept up no matter what its cost, as it is the most important postal service in the entire department. It pays too high a return—as does every other postal service—in improved and elevated citizenship.

I earnestly hope that every reader will give this postal zone matter and its revival of unsound postal theories, that have been discredited for over two generations, very serious thought. There should be no tax on intelligence.

Efficiency in Underground Haulage

BY C. E. BOWRON
Birmingham, Ala.

SYNOPSIS—*The mine operator may learn many valuable lessons concerning tramroad problems from observation of a well-managed steam railroad. The rules governing one apply to the other. One extremely important feature is to make someone responsible for each operation or for each department.*

ENGINEERING has been variously defined. One apt definition calls it the science or art of moving materials from one place to another. Another definition calls it the scientific spending of money to get the largest value out of a dollar. If we coördinate these two definitions, they will well apply to coal-mining engineering and management, where the prime object is to economically load and move coal from the bowels of the earth to daylight, to then move the impurities away from the coal and to finally load the clean coal, to be moved to the points of ultimate consumption.

Incidental to this we move many tons of air through the airways for ventilation. Nor is this any small movement in itself, for 75,000 cu.ft. of air per minute means about 3800 tons of air moved in 24 hours. We may also move many tons of water out of the mine with pumps. The weight of water thus moved often exceeds the coal tonnage; thus with a modest pumping of only 200 gal. per minute, this item amounts to 1200 tons per day. A mine producing, say, 1000 tons of coal per day may also have 5000 tons of air and water to handle "on the side." Add to this the movement of timber and supplies into the mine, and our definition appears quite apt indeed.

The processes rather naturally group themselves into the following: (1) The mining of coal, in which we may include cutting, blasting, timbering and loading; (2) ventilation and drainage as necessary incidental operations, and (3) haulage of the coal to the surface. It is relative to inside transportation that I desire to present some thoughts, nothing new or startling, to be sure, but possibly from a new angle or viewpoint. This viewpoint is that of considering the inside haulage system of a coal mine in the same light as that of one of our modern above-ground railroad systems, with main lines and branches, yards and terminal facilities, repair shops, round-houses, rolling stock, motive power, signals, maintenance of way and dispatching departments, etc. This is exactly what the mine tramroad is, on a diminutive scale of course. What then can we learn from the observation of modern and efficient railroad operations that can be applied to underground operations?

We find that railroad operation is a complex matter, and that it has been deemed necessary to divide it into departments in order to handle the various divisions, such as have just been mentioned. We find a responsible individual at the head of each department with someone to act in his absence. We also find all of the operations carried on in accordance with a well-defined system and a definite schedule. We can at once

appropriate both of these items to underground application. We will therefore outline the duties of each and every man connected with the haulage system, clearly defining his responsibility relative to operating, maintenance and repairs. Unless these duties are thoroughly understood there will always be a multitude of things which are everybody's business and which eventually become nobody's business. In other familiar words, a lack of definiteness fosters the gentle art of "passing the buck."

Proceeding with our observations upon the outside railroad system, we find main lines of the heaviest construction, well graded and aligned, with maximum permissible gradients. Large trains and heavy locomotives are the rule on main lines. Plenty of sidings are provided for passing, for way freight unloading and at terminals. Round-houses are built for the locomotives where they are carefully gone over at the end of each run and groomed for the next one. Cars with a flat wheel or broken sill or door are put off at the first repair shop. And so on, with details to any extent we might care to enumerate.

WHAT SOME OPERATIONS LOOK LIKE

Now, if it were possible to ascend above some mine of which we all know (not ours, of course, but the other fellow's) in one of our military balloons to a convenient height where we could get a bird's-eye view of the entire operation and its transportation system, and then have the lid taken off the mine, exposing it to our critical view, we might see something like the following: Crooked track, crooked rails, curves laid by main strength and awkwardness, light rail on locomotive hauls, rail joints just hanging together, sharp swags and knuckles, mules sweating up grades that could be eased off or avoided, ties too small and without ballast, miners waiting for cars and cussing the management, and numerous other things with which all practical readers of *Coal Age* are only too familiar. And all this arises from a lack of system, schedule and good management, to say nothing of cars, sidings and the like.

What can we do to bring our haulage to a point of reasonable efficiency and in a general way comparable with an outside system where defects are more apparent? I will briefly enumerate only a few things, and naturally they cannot all be done at once, especially if the mine fits the foregoing description. Assuming a well-developed operation, the haulage will naturally divide into one or more main haulage systems, carrying large trips by rope or locomotives. These main haulages will be equipped with terminal yards. The secondary or gathering haulages will take empties from the in-bye terminal yard and distribute them to the working faces or headings, by mule or motors or both. It is essential for smooth operation that there be sufficient length of sidings to care for both empty and loaded cars. If the main line trip be 10 cars long, the sidings at each terminal should have a capacity for 20, 30 or even 40 cars, so as to avoid the general stoppage of haulage if the shaft or slope hoist be out of commission or (at the in-bye end) to avoid holding up the secondary

haulage. The main-line track should be laid with 40-lb. rail or heavier, with angle bars, on well-ballasted ties. Sharp changes in grade either way, responsible for broken couplings and wrecks, should be smoothed out. A heavy rail, well laid, will prove a good investment where a mine has many years of life, from any point of view. It will require less work to keep the track up and in line; it will not wear out the car wheels quickly; spilling of coal and consequent cleaning up will be at a minimum; higher speed can be maintained, requiring fewer cars, and there will be fewer wrecks.

I have in mind a 5 per cent. grade about 500 ft. long, laid with 20-lb. rails, over which two 7½-ton locomotives operated for several years—and the tires lasted just two months. The cost of tires alone would have paid for heavier rails, releasing the lighter ones for room work.

Standard curves, switches and frogs should be adopted and curves should be carefully laid out with transit or string. The capacity of locomotives being limited to their starting effort, it is advantageous to locate sidings and terminals on the level or with a slight grade in favor of the loads. If the main haul requires several locomotives with passing tracks, a good signal system is imperative, and any up-to-date mine should have a telephone system with stations at terminals, passing points, etc. This should also be connected with the outside of the mine.

In the matter of secondary haulage, the balancing of the work between the several units, whether mules or motors, should be carefully done, with the purpose of keeping them busy and the even more important object of keeping an "even turn." One mule serving ten men on a 2000-ft. entry will naturally not give the men as many cars as on a 1000-ft. entry. Grades must also be taken into consideration. A few days' observation with a watch and notebook, following up the various units and the actual work done by each, will form a basis for the planning of this part of the work to the best advantage and the making of any desirable changes by either altering the haulage or shifting men.

I believe that I am within the facts in stating that the number of mines where all the cars are given the men, promptly, that they could and would load are few and far between. How often have you gone in a mine and asked a miner how many cars he can load and get the reply that he has only had one or two today, but could load five or six; and that some days he gets all he wants and other days he does not. This man may average up all right, but what kind of outside railroading would this be with one or two trains one day and five or six the next? Furthermore, how long would the road's patrons stand for such operation? Nor is this always the fault of the haulage system in itself. It not infrequently arises from a lack of a sufficient number of mine cars. The average mine is, I might say, constitutionally short of cars. Many managers do not seem to assimilate the fact that as the mine workings advance more cars are required for the same output, because the cars are longer in transit or are on the additional sidings, etc.

The importance of well-built, easy-running cars is being increasingly appreciated. All unnecessary expenditure of the miner's energy in pushing hard-running cars is a tax on the company, for if he loads less coal on this account it is necessary to keep more rooms open and more track in operation in order to maintain a given output. Roller bearings are now com-

mon and relatively cheap for the better service they give; periodical lubrication is of importance. Large axles are of advantage, and these should be held firmly in alignment. Large wheels run more easily than small ones and last longer, of course. In this connection we often have to adopt a compromise in order to keep the car from being too high. Car irons should be made to templet, and the best time to repair a car is as soon as it needs a single bolt, iron or plank and not after it is brought into the shop on a stretcher.

A daily report of delays arising from haulage, showing their cause and location and actual time lost, will assist in locating the weak spots. Thus if it is found that wrecks occur continually at one particular place the track at that point should be repaired so that the next one will occur somewhere else; if couplings are breaking they should be gradually discarded in favor of a stronger design. And so on, all along the line.

Even with ample equipment troubles may arise solely from lack of system and schedule, organization and coöperation. When organization is mentioned, I often think of my old friend Joe, a carpenter and all-round handy man. After Joe would get his instructions relative to a piece of new work, he would say, "All right, I'll get organized." He would then proceed to take a fresh chew of tobacco, fill his pockets with nails, chalk, string, tape-line and prints, sharpen his saw and hatchet, and then "go to it." Is it too much to say that the successful underground haulage system is composed of 50 per cent. cars, wire rope, motors, rails, ties, ballast, etc., and the other 50 per cent. brains?

Legal Department

INJURY TO COAL CUTTER'S ASSISTANT—Under the rule prevailing in Alabama, that an employer is not liable for injury to one employee due to negligence of a fellow servant, a coal-mining company is not liable for injury to a coal-cutting machine operator's assistant resulting from negligence of the operator in prematurely starting the machine while the assistant was acting under his orders. (Alabama Supreme Court, Vandiver vs. De Bardeleben Coal Co., 81 Southern Reporter, 569.)

CONTRACT UNENFORCEABLE AS BEING ONE-SIDED—A contract provided that a coal-mining company would sell, for delivery within certain territory, all coal which plaintiff might order up to 25,000 tons per annum, but imposed no obligation on plaintiff to order any quantity. Held, that although the contract is binding as to orders accepted by the mining company under it, it is not enforceable as to unaccepted orders; the agreement lacking mutuality of obligation—one of the vital elements of a valid contract. (United States District Court, Southern District of New York, Leach vs. Kentucky Block Cannel Coal Co., 256 Federal Reporter, 686.)

WHEN EMPLOYER'S NEGLIGENCE IS NOT PRESUMED—Suit for injury to a coal miner, resulting from fall of a boulder, is governed by the general rule of law that the mere occurrence of an accident does not warrant an inference that the employer has been guilty of actionable negligence. "The master is not an insurer of the safety of the employee; neither does the happening of an accident by which the employee is injured in the course of his employment, standing alone, furnish the basis for an inference of culpable negligence on the part of the master. An exception to this general statement of the rule is where the dangerous instrumentality which causes the injury is exclusively under the control of the master." (Montana Supreme Court, Barry vs. Badger, 169 Pacific Reporter, 34.)

Lignite Deposits in Ireland

The term "lignite" or "brown coal" is usually applied to all coals which occur in formations more recent than the true Carboniferous period, although brown coal of the better sort sometimes so closely resembles good bituminous coals as to be indistinguishable by any marked difference of composition or appearance. As a rule brown coal has a widely variable calorific value on account of its fluctuating content of water and ash; 4000 to 6000 calories are the ordinary limits.

Austria and Germany were hitherto the only two countries where lignite was commercially exploited on a large scale. Immense stores, however, exist within the British Empire, and their development is only a matter of time. The coal deposits of Canada are estimated to be one-seventh of the world's known supplies; a very large amount of this total is, however, lignitic, and this is especially so in Alberta, where the total supply of all classes of coal is estimated to run to 1,000,000 tons. Among the Australian States Victoria possesses immense deposits of brown coal.

In England the lignite obtained from the Bovey-Tracey field in Devonshire is utilized for various processes of manufacture, especially at the neighboring potteries. Large resources are also known to exist in the Weald of the southeast of England, and, although the mining operations which were carried on at one time at Heathfield, Bexhill, and other places were failures so far as the actual discovery of true coal was concerned, there seems to be no reasonable doubt that the value of these lignitic deposits will appreciate to an important extent in the future. It is also stated that there are evidences of an extensive deposit of Tertiary lignite near Brighton.

BEDS NEAR LOUGH NEAGH WERE DISCOVERED AFTER PERIOD OF INVESTIGATION

The presence of lignite in Ireland is noted in a number of places, but many of them are unimportant. Near Moneymeaney, County Londonderry, it exists associated with limonite and white limestone, and at Island Magee the seams of lignite assume considerable thickness. In County Down beds also occur which have not, however, in the past been accounted of much value. It is possible that more detailed investigation might reveal the presence of new lignite deposits and give more data concerning the old.

In this connection it may be stated that up to a very recent period it was assumed that no lignite beds of any value existed in the vicinity of Lough Neagh, and it was left to later investigation to disprove that theory. At the present moment there are several companies actively engaged in prospecting and boring operations in that neighborhood, and the possible future manner of the utilization of the lignite, if discovered in workable quantities, is looked at from different points of view by the various parties concerned. For example, one of the companies has in mind the practicability of making lignite briquets. The lignite around Lough Neagh occurs in the interbasaltic formation and in the pliocene clays. The most important deposits are said to be found on the eastern and the northwestern sides of the lake. Toward the center of the lake basin the mineral is fairly deep, but outcrops at the margins. It is probable that in working the clays the same difficulties will be experienced as on the Bovey-Tracey field in

Devonshire, although it seems to be fairly conclusively established that the lignite in the Irish area is not interspersed among them.

No useful estimate can naturally be given of the quantity or extent of the lignite formation, as the experimental operations will not be completed for some time. Furthermore, while a coal seam may retain its original width and thickness for a considerable distance, it is not wise to make any assumption of this nature in connection with lignite, as the seam is variable. It is interesting to note that borings for bituminous coals are also being carried on in this neighborhood and present indications, at all events, would seem to point to a successful outcome.

PULVERIZED LIGNITE A SUCCESSFUL FUEL

As a domestic fuel most lignites are unsatisfactory on account of their comparatively high sulphur content, and in Canada they have proved an unsuitable substitute for anthracite, for which many household stoves are properly designed. In the same country the use of lignite for firing locomotives has been forbidden by the railway commission on account of its propensity of emitting dangerous sparks. Experiments so far made with the object of modifying the lignite by special treatment and then converting it into briquets have not met with any pronounced success.

At present the fuel research board is making experimental inquiries into the preparation and use of fuels from brown coals and peat, and the results of these experiments will naturally be of the highest importance to Ireland. So far it seems to have been demonstrated that lignite and peat, when pulverized, are thoroughly satisfactory for use as fuels. Lignites, for example, of which 20 per cent. may, in spite of all precautions, be left in the mine as smalls, can be dried quite satisfactorily for working in the pulverized form, and their use with locomotives has met with a remarkable degree of success. The application of peat in the same form is all the more remarkable considering its high water content. This pulverized fuel may also be used in other directions, and, provided the experiments are successful from the commercial point of view, sources of power in Ireland which have hitherto been neglected to a great extent may prove of the greatest utility in the future.

USE OF LIGNITE FOR POWER PURPOSES—DISTILLATES

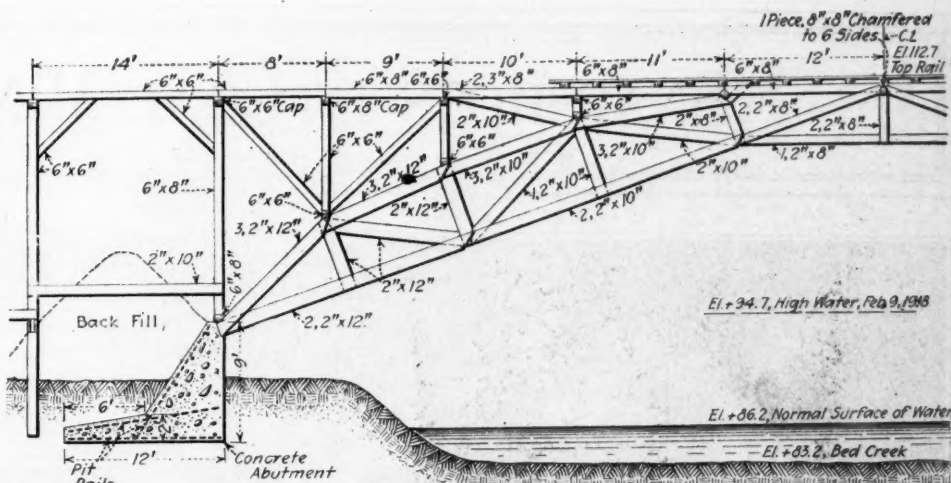
It is now generally admitted that peat can be employed not only for generating steam but also as a power and fuel gas; the gas generated from low-grade coal is used for industrial purposes, and, no doubt, lignite would give equally satisfactory results. To determine the value of some western Canadian lignites as fuel for producing power gas in a non-byproduct recovery gas producer tests were made a few years ago with commercial samples from five producing mines, and the result showed that lignite could be profitably used for this purpose, especially where cheap hydroelectric energy was not available. At Edmonton, in the Province of Alberta, the municipal power plant consists of several steam units and one producer-gas unit, and uses lignite coals almost exclusively obtained from mines in the vicinity. The producer-gas plant has answered most expectations, although in this case the producer installed was not entirely suitable for burning lignite. Better results would, in all likelihood, be recorded with a properly designed gas plant.

Some experts are of opinion that the Lough Neagh deposits could best be employed for the production of distillates. The nature of these products varies according to the age of the geological formation in which the coal occurs. In the older coals the original grouping of the elements in the parent vegetable matter which gives rise to acid products of distillation are alkaline from the presence of ammonia and other nitrogenous bases; but lignite coals, belonging to a later period, have been less completely altered from the original composition of the woody matter from which they have been derived, and, like wood and bituminous shales, yield products of the paraffin series. Some lignitic coals have, however, a high nitrogen content, and this could be recovered as ammonium sulphate, which would naturally find a ready sale in an agricultural country like Ireland, whose imports of that fertilizer amounted in value to nearly \$300,000 in 1915. With the commercial exploitation of the Lough Neagh beds, a profitable chemical industry should spring up in the neighborhood of Belfast—the lake being only 20 miles from that city, with which it is connected by railway and canal.—*London Statist.*

One Hundred Foot Timber-Arch Span

BY D. R. WALKINSHAW
Greensburg, Penn.

A timber arch span 100 ft. long was built recently over the Big Sewickley Creek at Hunker, Westmoreland County, Pennsylvania, for the purpose of getting out coal during the shortage. The bridge was de-



DESIGNED IN ACCORDANCE WITH LUTEN FORMULA FOR CONCRETE ARCH

signed by the writer for the Fulton Coal Co. and was erected by the forces of the company under the direction of the carpenter.

The increased demand for coal has caused the development of a large area of "Freeport" coal in the district around Hunker, which coal in this field has hitherto been considered of little value. In a distance of five miles along the above-named creek some forty mines have been opened in the "Freeport" seam.

In order to provide the shipping facilities that were needed it has frequently been necessary to extend trestles or tipples across this creek so as to load the coal at the railroad sidings, and the accompanying sketch shows the design of one of these bridges with the various dimensions.

Big Sewickley Creek has considerable width at places, and the bridge shown was designed with a clear span of 100 ft. and a height of about 18 ft. The arched members were designed in accordance with the Luten formula for a concrete arch ring. The curve is therefore a mean between the semicircle and the ellipse. The bottom chords and trusses are merely used to stiffen the short panels. The bridge is symmetrical throughout and consists of two ribs spaced 4½ ft. c. to c. and completely X-braced. In order to prevent swaying at the center two ½-in. wire-rope guys were anchored to large trees along the bank. The photograph shows the completed bridge, in which is seen the old suspension footbridge heretofore used.

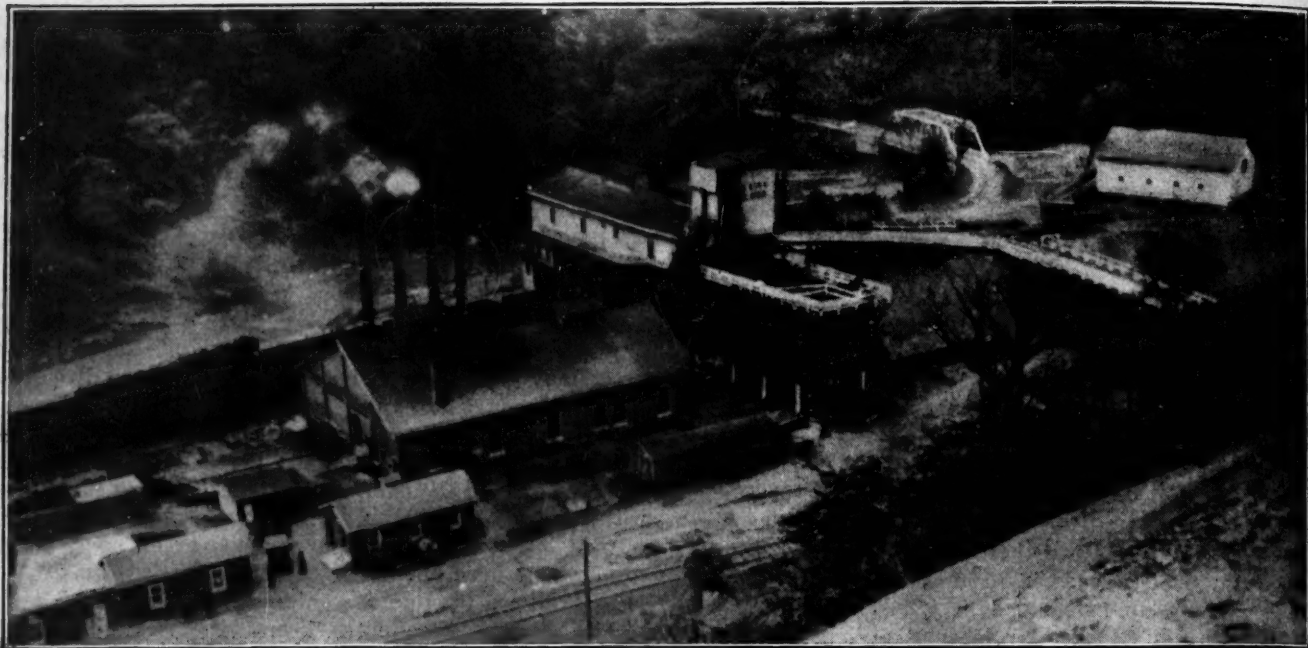
The writer was the designing engineer and Joseph Kettering was the carpenter who had charge of the construction for the coal company.—*Engineering News-Record.*

THE U. S. SHIPPING BOARD has announced new trade routes that will enable cargo liners to carry American goods on scheduled sailings to every part of entry in the world.

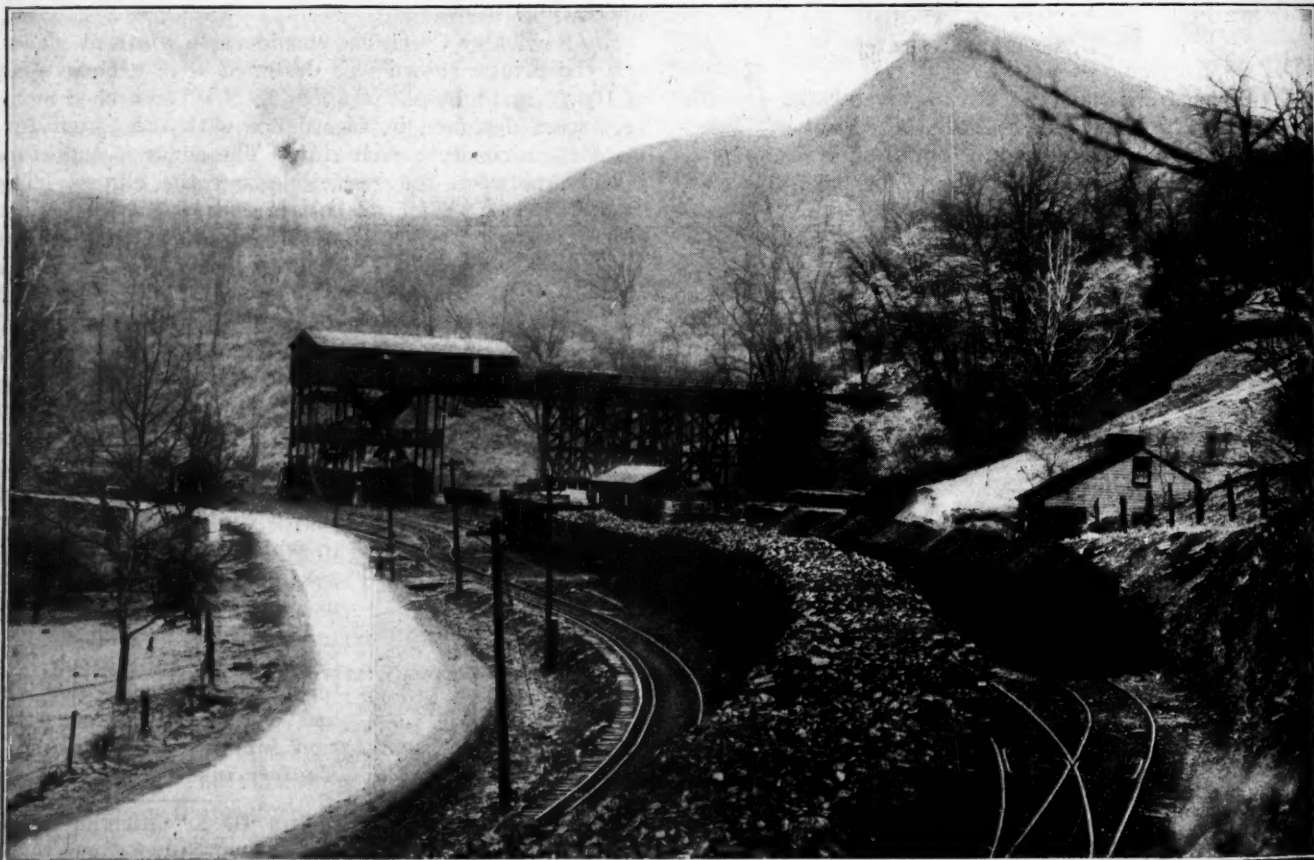


TIMBER ARCH CONNECTS COAL MINE WITH RAILROAD SIDING

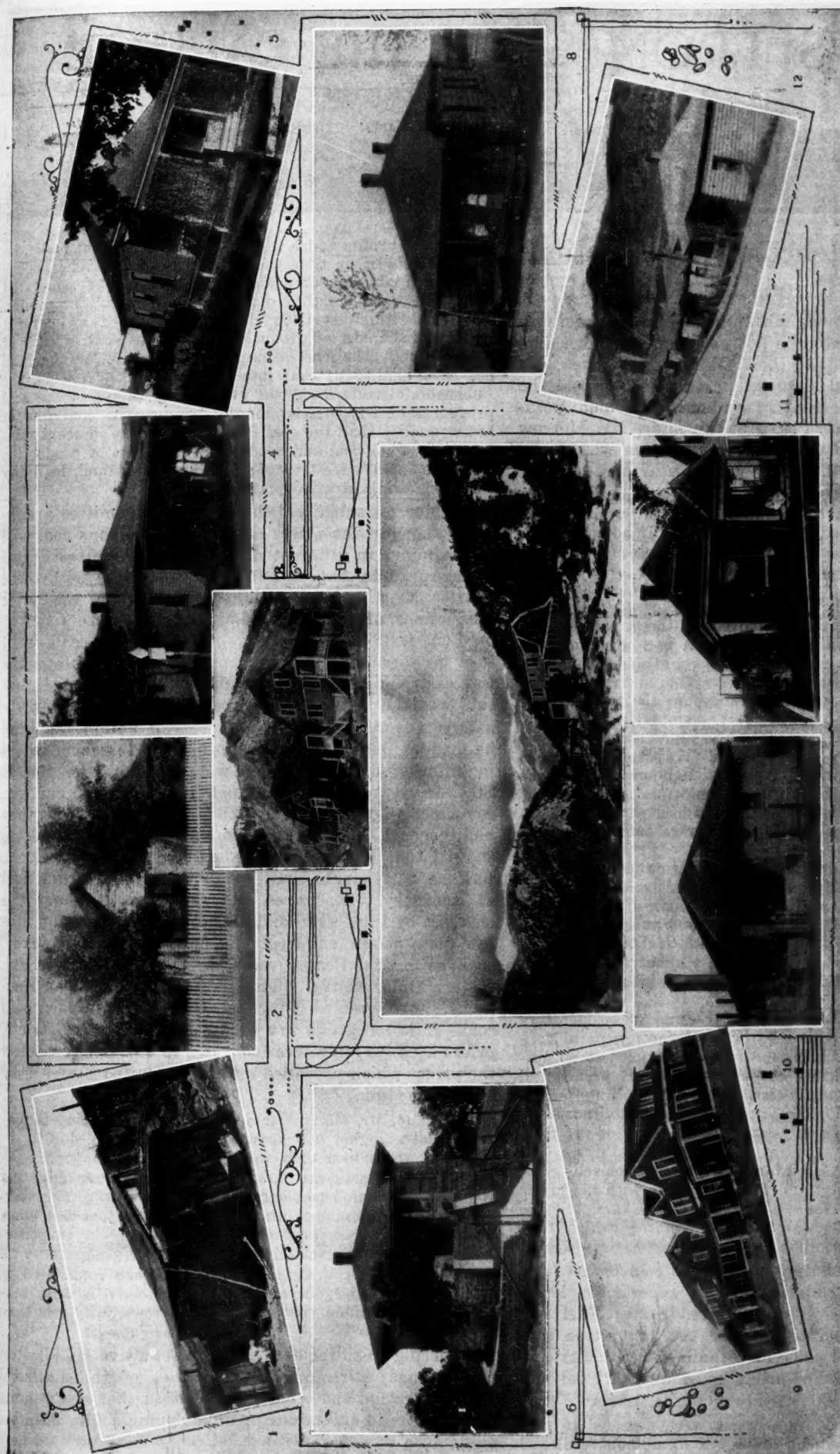
SNAPSHOTS IN COAL MINING



BIRD'S-EYE VIEW OF THE SURFACE PLANT OF THE HAZEL KIRK MINE NO. 2, UNION COAL AND COKE CO. The mine is situated on the Pigeon Creek Branch of the Pennsylvania R.R., near Monongahela City, Washington County Pennsylvania. The Union Coal and Coke Co. is a subsidiary of the Midvale Steel and Ordnance Co., of Philadelphia.



VIEW OF THE TIPPLE OF THE PATTERSON MINE, OWNED BY J. H. HILLMAN & SONS CO., OF PITTSBURGH, PENN. The mine is located near McKeesport, Penn., on the Monongahela River. In the cars is shown the day's loading of $\frac{3}{4}$ -in. and slack coal. The operation is in the Pittsburgh seam.



Courtesy of C. F. & I. Bulletin.

The Evolution of the Colorado Fuel and Iron Co.'s Workmen's Homes From Pioneer Days to the Present Time

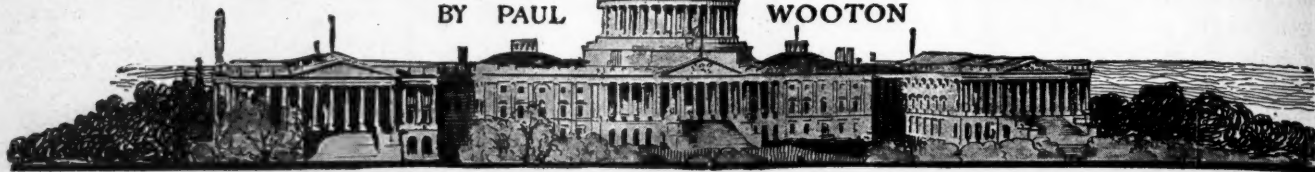
1—Type of "squatter" shacks erected by foreign-born coal miners in the early days of the industry. All buildings of this kind have been removed from the properties. 2 and 4—Types of comfortable frame houses occupied by many employees and their families. 3—Double dwellings recently erected at Cañon City. 5 and 11—Homes in the Minnequa Heights district, Pueblo. 6—A modern cement-block cottage in a coal-mining town. 7—Part of Cañon City, "upper camp," showing a newly erected modern double house. 8—Cement-block cottage of the type now constructed at most of the mining towns. 9—New double houses at the Lime camp. 10—Five-room brick cottages, with modern conveniences, recently erected at Sunrise, Wyo. 12—Street in a coal-mining town, showing type of dwellings.

NEWS FROM

THE CAPITOL

BY PAUL

WOOTON



Denies Existence of Combination to Boost Prices of Soft Coal

A combination among bituminous coal operators to maintain or fix prices does not exist, and would not be possible if attempted, J. D. A. Morrow, vice president of the National Coal Association, on Aug. 26 told the Senate subcommittee that is conducting an inquiry into the coal situation. Prices at the mine, Mr. Morrow added, have declined under the competition which prevails and are lower than they were a year ago.

There are about 5000 separate commercial producers operating approximately 7000 mines from which bituminous coal is regularly shipped, Mr. Morrow said. In addition there are some 2000 operators with about 3000 mines who begin producing and selling coal whenever the price goes up a little and offers a profit to them. Thus, in 1917, coal production was reported to the U. S. Geological Survey from 10,634 mines. Moreover, there are hundreds of thousands of acres of coal lands along railroads on which new mines can be readily and quickly opened by any one so disposed. Such a condition obviously does not lend itself to restrictive combinations among producers. In addition, the operators of certain mining fields are subject to competition from the producers of other fields, so that buyers have many different sources of supply available to them. Anyone who alleges that there is a nation-wide combination among bituminous coal producers, when these are the conditions of bituminous coal production and distribution, merely advertises his own ignorance or convicts himself of deliberate and vicious misstatements.

Of the 5000 separate bituminous coal producers in the United States, 2294, approximately 45 per cent., held membership in the National Coal Association. They produce about 60 per cent. of the total output of bituminous coal in the country. Charges that the National Coal Association is a combination to maintain prices are without foundation in fact; they doubtless proceed simply from ignorance of its purposes and activities.

The National Coal Association represents these operators and looks after their interests in matters of general concern, such as transportation and traffic questions, standardization of cost accounting, cooperation with Governmental agencies and similar activities. There is nothing secret about its business. Its files and records are open to the committee or any other duly authorized agency of the Government at any time.

The National Coal Association neither buys nor sells coal; neither does it have anything whatever to do with the prices which its members ask or sell at, nor with the territory into which they ship their coal, nor the quantity which they produce.

Mr. Morrow stated that bituminous coal prices have declined since the armistice, and in general are lower than the prices fixed by the United States Fuel Administration. He pointed out to the committee that until Feb. 1 last, the price of bituminous coal was controlled by the maximum prices fixed by the Fuel Administration in the various producing districts.

These Fuel Administration prices were intended to prevent the charging of undue prices for bituminous coal and

to limit the profits which the mine operators might make, he said. At the same time they included fair profits in order that the production of sufficient coal should be stipulated during the war, but they did not permit exorbitant profits. The Fuel Administration prices were based on careful studies of the cost of producing bituminous coal in each of the districts. The Fuel Administration prices, however, did not take quality of coal into consideration. That is, the Fuel Administration did not give higher prices to the coal producers of any district merely because the coal was of better quality than the coal produced in some adjacent mining field. Poor coal and good coal, if the cost of production were the same, were treated alike, we understand, in fixing the Fuel Administration prices.

Mr. Morrow submitted charts to the committee graphically showing the prices at which bituminous coal sold at the mines in different districts of the United States from Apr. 1 to Aug. 1, 1919. In connection with these charts, Mr. Morrow explained that when the price restrictions of the Fuel Administration were removed on Feb. 1, 1919, the better, more desirable coals went to a premium in the open competitive market and the less desirable coals declined in price. He stated that this was the action to be expected in a market where a buyer exercises his choice and can obtain the kind he prefers. As a result, instead of the uniform prices in different districts, which were fixed by the United States Fuel Administration, prices promptly spread out, some coals going higher and some lower than they had been. The charts submitted to the committee showed that in districts producing high quality coals, such as Pittsburgh, southern Illinois, the Harlan field at Kentucky, etc., prices had remained at about the level set by the Fuel Administration or had advanced a few cents above that level. In most districts, however, such as central Pennsylvania, northwest Pennsylvania, eastern Ohio, central Illinois, the Hazard field at Kentucky, northwestern Virginia, etc., Mr. Morrow said coals of lower grade are produced. In such districts, prices declined anywhere from 10c. to 40c. per ton below the prices which prevailed under the United States Fuel Administration.

Meantime, Mr. Morrow said, the cost of producing bituminous coal is higher now than it was a year ago, due to the fact that the mines then were operating six days a week and in many cases are now operating only four days per week, and in some cases only three days a week. The overhead expense of maintaining mines goes on just the same, whether coal is produced or not. These idle-day expenses have resulted in increased costs per ton, as compared with last year. When these increased costs are considered in connection with the general decrease in prices, it is clear that profits of bituminous coal operators are materially less than a year ago.

Referring to statements by Representative Huddleston of Alabama, Director General Hines of the Railroad Administration and others, to the effect that bituminous coals prices in the mines are unduly high, Mr. Morrow said:

I wish to deny publicly and emphatically these allegations that bituminous coal prices are being maintained in some improper manner and are unduly high. I am convinced that these statements proceed simply from a lack of understanding of the fact.

Commenting on the suggestion by Director General Hines in his letter to Vice President Marshall, under date of Aug. 14, 1919, that in the event of any Congressional inquiry it would be expedient to ascertain the extent to which the absence of demand has been due to the maintenance of high prices, which discouraged the demand, Mr. Morrow said:

The committee will please notice that demand from consumers, as shown by the United States Geological Survey reports, has been the poorest in precisely those districts where the prices have declined the most from the Fuel Administration level; on the other hand, the Geological Survey reports show the steadiest demand for coal in precisely the districts where prices have gone down the least.

If Mr. Hines' insinuations had been well founded, it would be reasonable to expect that the absence demand would chiefly characterize the high-price districts and that the low-price districts would be filled up with business and running full time. The contrary condition is shown by the official reports of the Survey and answers the Director General.

Mr. Morrow drew comparisons between the prices of bituminous coals at the mines in the United States and foreign countries.

Prices at the mines in Great Britain, he said, are about three times the mine prices prevalent in the United States; in France the mine prices are more than three and a half times those of the United States. English mine prices range from \$6.94 to \$7.14 per ton, while bituminous coal in France is costing about \$8.76 per ton at the mines. The average mine price of bituminous coal sold in the United States is in the neighborhood of \$2.40 per ton.

Mr. Morrow closed his testimony by stating that the real problem is one of getting sufficient bituminous coal produced and shipped.

Take Issue with Railroad Director's Car Supply Report

Publication of the coal-car statement of the Director General of Railroads has brought a flood of protests to members of Congress, to the National Coal Association and to the American Mining Congress. Operators generally take the position that the Director General's statement does not reflect true conditions as to car supply. The matter was the subject of comment on both the floor of the House and that of the Senate. Senator Pomerene of Ohio has printed in the *Congressional Record* a long list of telegrams he has received. In connection with the presentation of the telegrams, he said:

I think it is only fair to say that perhaps in the early part of this year the coal difficulty was not due so much to car shortage as it was, possibly, to the high price of coal, which made many consumers hesitate about buying, or at least delaying to buy, hoping for better prices. I think that situation has somewhat changed; but the public is little concerned as to whether it is due to the high price of coal or to shortage of cars. It is interested in the coal supply; and while these cars are being manufactured and distributed by the Government through the medium of the Director General of Railroads, I hope there will not be cause for further complaint in this behalf. The report of Friday, made by the Director General of Railroads, indicates that a great number of cars are being supplied, I believe at the rate of about 300 per day. It is unfortunate that these cars were not distributed many moons ago.

West Virginian Defends Coal Industry on Floor of House of Representatives

What is regarded as a very able defense of the coal operators and of the coal industry was made on the floor of the House of Representatives, Aug. 19, by Wells Goodykoontz, of the fifth West Virginia district. His address, which was frequently punctuated by applause, was prompted by the attack made on the coal industry by Representative Huddleston of Alabama. Extracts follow from Mr. Goodykoontz's remarks:

It is usual for coal mines to be idle in summertime for lack of orders. It was for the purpose of keeping the mines at work and giving employment to the men and saving the population from suffering during the approaching winter weather, and in order to keep our mills and factories and furnaces going, that the National Coal Association appropriated the sum of \$50,000 to warn the people. This patriotic action upon the part of the coal operators has been held up to public view as only the indication of lack of "common humanity and honesty on the part of the coal operators of this country." A more unfair statement and unjust allegation was never made, and the man who assumes to advise a domestic consumer in this country not to lay in a supply of coal for the coming winter assumes a terrible responsibility.

There is no industry that is subject to more trials and misfortunes, disappointments and vicissitudes than is the coal-mining industry. There is no business that requires higher technical skill and greater business enterprise than that of producing coal.

There is no business enterprise that is as harrowing and exasperating as that of conducting a coal-mining operation. The establishing of an efficient coal-mining plant calls for a very considerable investment. There is a very large financial risk coupled with the development of a coal mine, and the man who enters upon it engages in a business venture that may cause the entire loss of his investment.

The ancients found good in everything, and believed that even a toad had a jewel in his head. And so, from the war and the taxing laws the operators have been held to a system of uniform accounting, with the result that they have discovered what they never before seemed to have realized, that they, under the old system of prices, had been losing money every day they operated the mine. Expert accounting showed them that every ton of coal taken from the mine reduced their capital expenditure just that much, and that when exhaustion was complete the entire investment was extinguished, so that coal must be sold at a price sufficient to cover the original cost of the coal and the plant, with interest, taxes, and other fixed charges, but also to cover the cost of mining.

To Cooperate on Heating and Ventilating

Important coöperative work is to be undertaken by the Bureau of Mines and the American Society of Heating and Ventilating Engineers. The engineers are to furnish a director of research at a salary of \$5000, an assistant director at a salary of \$2400 and a stenographer at \$1040. The Bureau of Mines is to furnish a fuel engineer at a salary of \$3000, an assistant fuel engineer to draw \$1800, and a helper to be paid \$1200. The research work is to be done at the Pittsburgh station of the Bureau of Mines, where all the facilities of the Bureau are to be available for use in the investigation of fuel, heating and ventilating problems.

Development of the Government's coal mines in Alaska is proceeding. Reports of operation for June, which have just been received, show that 3300 tons were brought to the surface at the Eska mine and 120 tons at the Chickaloon mine. The former mine employs 80 persons and the latter 32 persons.

COAL AGE

PUBLISHED BY MCGRAW-HILL COMPANY, INC.
TENTH AVE. AT 36TH ST., NEW YORK

Address all communications to COAL AGE

Volume 16

August 28, 1919

Number 9

The Better the Coal, the More Mobile the Labor

MOBILE labor, the kind of labor that is at home where it hangs up its hat, has certain advantages after all. It congregates where labor is needed, it wanders away readily when the need is at an end. Turn-over is not all loss, when the books are balanced. It was mobile labor that developed the West, is creating Alaska, that made the Appalachians a hive of industry.

In the Middle West the mobile labor of a generation or two ago settled down and sunk its roots into the ground. It built houses and formed a community life. Many of the older coal fields of the Middle West are of that type. Now that better fields have been found, and the best coal of the old fields has been worked out, the problem is what shall be done with this mobile labor now become immobile, for which no employment can be continuously found.

The newer mining regions of the Middle West, those which have the better coal, have company houses and accordingly are manned with a readily moving population. The coal fields in the mountainous districts of the Appalachian Province, where the coal is always most in demand, are full of company-owned villages with a mobile population. Thus for the most part, in the sections with the poorest coal, the employees own their homes, while in the fields with the best coal the companies own the houses. Thus mobility which should go with poor coal is most marked with the best. Georges Creek and the Moshannon Valley are sections, however, with good coal and an immobile population.

The "United Mine Workers' Journal" shows porcine "Profiteers" feeding in a field of "War-Time Prices," labeling the cartoon: "The Pigs are in the Clover." In what else can any one feed but war-time prices with wages higher, if anything, than before the armistice? Try again, cartoonist Kettner; the pigs must break into a yet more luscious field, namely one growing "post-war prices," if they are not to starve to death with the "post-war" wages that the mine workers and others are demanding.

Pumps on Hand Are An Insurance Policy Against Water Troubles

BETWEEN successful and unsuccessful superintendence lie only the practices of prevision and provision. The inadequately experienced fail entirely to look ahead and others, well knowing the difficulties and having clearly visualized them, take no precautions to head them off. In nothing is this ignorance and indifference more general than in light pumping. The average mine superintendent fails to order his small

pumps till he is badly beset for the need of them, and he is constantly at loggerheads with the purchasing agent because that functionary tries to put the urgent order through according to the tried and methodical methods of his profession.

As a matter of fact, at most mines, the pumps should arrive as soon as the timbers, whether the opening be a slope, a shaft or a drift. In any event water will probably be encountered in a few days, and is certainly to be expected eventually, and the presence of the pumping outfit insures reasonably economical removal of the water and the steady progress of the work. Many a man has lost five or six times the cost of a pump in trying to do without one or to make badly broken equipment do the work. And then, after all his wasted effort, he has had to purchase the pump into the bargain.

The loss of time is often worse than any other loss. The completion of every part of a mine plant is schemed to synchronize with the completion of every other part. If, therefore, the plant is built and the mine is not ready to utilize it to the degree intended, an unnecessary loss results.

Many a mine works at half or two-thirds tonnage waiting for the water to be pumped out of some vital roadway that has been drowned out. In newly opened mines many a railroad is left without opportunity for service, many a boiler and engine plant lies idle or runs at a tenth or a fiftieth part of capacity, because a certain essential part of the development is flooded with water.

Nowadays, with portable electric and pneumatic pumping outfits, there is no necessity for the delays which formerly unduly protracted and needlessly harassed operation. No longer need a mine with thin coal wait so distressingly on the extension of headings through water-soaked dips. A degree of certainty and assurance is imparted to operation. Where, before, the management declared that the place would be driven in so many days, "if we don't strike a dip," with portable pumps there need no longer be any such proviso if only the pumps are on hand ready to be wheeled into place and put in operation.

In those early days of the baled powder keg and of the wood and pitcher pumps, in those years when water was taken out in a car or shoveled on the top of every pit wagon of extracted coal in the hope that sufficient would stay in the leaky vessel during the short passage from the bottom of the dip to the outwardly sloping roadway beyond, with what worries and discomforts was mining fraught! With what industry did the heading man send shovelfuls of water after the retreating car in the hope that put in at the last moment it would not be drained off till the summit of the hill was reached!

And with what patience those early heading men drove their main headings down into the dips, put out their crosscuts and then drove the return airway (far from being an airway till completed) up the grade, so as to avoid the difficulty of driving two headings downward into the water-soaked strata! With what weariness did working places stand till other places were up and water courses were constructed! Our tonnage today rests where it does largely because the pump is there to do the work as soon as pumping is needed.

Mining history revolves around the pump. All the early mines in England and all the native coal work-

ings in China (and not a few of our own early mines) stopped as soon as such water was reached as needed lifting. It was the discovery of the steam pump that made extensive mining possible and brought a new era in British mining. So important was this phase mechanically that it may well be wondered if the steam engine would ever have been perfected if it had not been for the persistent needs of the mining engineer, for other mechanical uses of the steam engine were adaptations and, for some while, not any too successful adaptations, of the mine steam pump.

And even now progress still waits on the pumps. Not that the pump is laggard, but because our use is laggard. We wait to requisition for the pump we want till some few days after it is needed, and then wait long for its delivery. As a result haulageways and ventilation places lag and the tonnage is curtailed; sags fill with water and cars run hard from loss of oil in the bearings; locomotives cannot run through the water and the tracks are spoiled. The poorly equipped mine is always waiting for something, and the superintendent sees his tonnage decline, though he puts in double time at his work nevertheless. If he would start right and stay right with the possible needs all provided, he would not have to be so skillful in meeting trouble or so meticulously painstaking, nights and Sundays; and the trouble he so much dreads would never come.

Instead of the five-day week we need the 290-day year. Who will contrive to regulate our buying so that such a steady outflow of work will be attainable? If it could be done, it would perhaps increase the world's real earnings 30 to 50 per cent.

Failures in Profit Sharing

EVERY once in a while some one revives, as something new, the cry of profit sharing. The plea sounds so logical and so excellent that it readily carries conviction with it. When profits are large and stable or even increasing, there are no great objections to profit sharing. True, the defect of profit sharing is that the revenue does not come to the working man once a month or once every two weeks. Coming in bulk, profit sharing does not help him pay the rent or fill his market basket. It is an exceptional income which, coming in at widely separated periods, is soon spent and cannot help in the payment of the weekly expenses.

If the profit is certain, and never gets less, the workman receiving it is not disposed to complain, but if it should get smaller, if it ceases or if it is replaced by a deficit, what happens then? The workman is not disposed to accept a gamble for his wages. That is a recognized principle of socialism which is worthy of study, if only as the creed of covetousness. It decrees that there shall be no uncertainty of return. Whether a man chooses a line of work which no one wants or one for which he is in no way fitted, he must, nevertheless, be fully protected.

If he cannot put the balls in the pocket, someone else must do it for him. He may gamble with his money when he has it, but not for him are decreasing returns for his labor. The capitalist may be like the ship of the desert, the camel, and go without for an inordinate period of time, but the workman will not do so. If he were so constituted he would be of the genus, "cap-

italist." It has well been noted that a fish with gills and fins takes naturally to water.

When diminishing returns occur the workman is apt to be suspicious. He believes that such charges as insurance, depletion, amortization and obsolescence should be ignored and that nothing should be put aside for a rainy day. Why charge heavily, for instance, for insurance when no accidents have been met. However, there are men whom diminishing returns might not shake in their loyalty. They are not many. Faced by a year of profitless operation most workmen will want an increase in wages that will equal the last divided profit, so that they will be safely assured of last year's income.

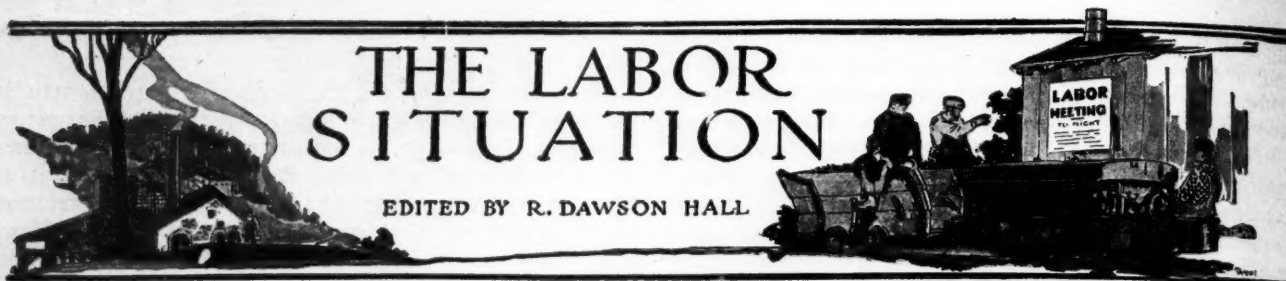
When there is a loss, their profit-sharing is for the nonce at an end. Then the only effect of the profit-sharing scheme is to give the employer discontented men. The plan will work fairly well so long as profits grow, but the coal business is hardly one in which that condition can be secured. If it were a profit-sharing that would pay the profit as an extra wage throughout the year after its earning to those who stayed with the company it would have many arguments in its favor.

Great Britain, in its long and varied and economic history, has tried profit-sharing extensively. In 1912 the Government of the United Kingdom published an analysis of all the many attempts to share profits with the employee in the past 125 years. From that report it appears that 299 such experiments were made, 133 of which failed. Thus there remained 166 other ventures, but they only involved 106,000 employees out of a possible 15 million. Three-fourths of these were public utilities where a profit was, up to that time, practically always made. Since 1912 there must have been many years with nothing but a deficit, and the death rate in the 166 concerns must have been large.

Unions are usually dead set against profit sharing. They argue that it makes men satisfied with a lower wage and that a concern with a lower wage can always cut the price and so underbid other concerns. That, however, could not be the case with coal mining where the scale is fixed by union agreement, and the profit-sharing capitalist, like his old line competitor, would have to pay the union scale.

Again it is argued that the profit sharer must stay to get his profit, and so is not given his full liberty to quit at his pleasure. Also, in part, the union objects to the contentment it may foster if profits steadily increase. Contentment does not exactly spell union success, and perhaps a union man would be superhuman if he could overcome his objections to any scheme which caused men to regard the union as unnecessary. And again profit sharing tends to increase efficiency and by that fact enables the profit-sharing capitalist to underbid his rivals, thus making the lot of the discontented employees of the concern which does not divide profits harder than it would otherwise be. The workmen in the non-participating company in consequence make a call on the union for the suppression of the concern that is dividing profits.

The increased cost of transportation, foreshadowed in the losses sustained in the operation of the railroads and in the increased pay demanded by the railroad men, will add immensely to the price of coal delivered to the consumer and will add to his woes. Larger wages for mine workers and larger transportation charges are fit causes for the discomfiture of the masses.



Changes in the Cost of Living July, 1914—July, 1919

The cost of living for American wage-earners was 71 per cent. higher in July, 1919, than at the outbreak of the world war in July, 1914, according to a preliminary statement issued recently by the National Industrial Conference Board based on a careful survey of conditions the country over. This represents an advance of 6 per cent. since March, 1919, and of 12 per cent. since June, 1918. The increase of 71 per cent. to July, 1919, makes the highest point yet reached and compares with an increase of 61.3 per cent. to March, 1919; of 65.9 per cent. to November, 1918, and of 52.3 per cent. to June, 1918.

The total increase for the five-year period since the beginning of the war in the average cost of each of the principal items entering into the family budget was:

	Per Cent.
All items.....	70.8
Food.....	85
Shelter.....	28
Clothing.....	100
Fuel, heat, and light.....	57
Sundries.....	63

	Per Cent.
All items.....	5.9
Food.....	5.7
Shelter.....	4.9
Clothing.....	10.5
Fuel, heat, and light.....	No change
Sundries.....	5

In combining these separate items to obtain the increase in the budget as a whole, account has been taken of the fact that approximately 43 per cent. of the income of the average wage-earner's family is spent for food; 18 per cent. for shelter; 13 per cent. for clothing; 6 per cent. for fuel, heat and light, and 20 per cent. for sundries. This distribution is based on studies of the expenditures of a large number of families made by the United States Bureau of Labor Statistics and other authoritative government and private agencies. The method of computing the change in the cost of living on the basis of the increases found for the separate items by the National Industrial Conference Board is shown below:

Budget Items	Relative Importance in Family Budget, per Cent.	Increase in Cost Between July, 1914, and July, 1919, per Cent.	Increase as Related to Total Budget, per Cent.
All items.....	100.0	70.8	70.8
Food.....	43.1	85	36.6
Shelter.....	17.7	28	5.0
Clothing.....	13.2	100	13.2
Fuel, heat, and light.....	5.6	57	3.2
Sundries.....	20.4	63	12.8

^a Based on an increase of 84% up to June 15, 1919, as reported by the United States Bureau of Labor Statistics.

The allocation of expenditures for the different budget items usually varies so little among the families of wage-earners that with any reasonable distribution there would be but slight deviation from the average increase of 71 per cent. since 1914. This figure is, therefore, broadly representative of conditions the country over. But it should be emphasized that special local, racial or other circumstances may at times make necessary some revision to adapt this estimate to meet specific conditions. This is especially true of rents, since changes in this item have at times differed considerably in separate communities. With the data given, however, such necessary adjustments may readily be computed.

Estimates of changes in the cost of living made by the Board on the basis of retail prices and expenditures for the separate budget items by average families must not be confused with changes in wholesale price index numbers such as Bradstreet's, Dun's or those of the New York Times *Analyst*. Wholesale commodity prices do not necessarily change concurrently with retail prices and, as already pointed out by the Board, they often tend to advance faster than retail quotations.

Although valuable as an index of market conditions, commodity prices do not take account of the relative importance of the different items in the family budget. Likewise changes in retail prices of food should not be used as representing changes in the cost of living, since they measure but one item in the budget. The only accurate measure of changes in the cost of living is that based on retail prices weighted according to the proportion of the total budget spent for each item by average families.

More detailed information regarding changes in the cost of the separate budget items is given briefly below. Average retail prices of food as collected by the United States Bureau of Labor Statistics have been accepted by the Board as the best available measure of changes in the cost of this item. For all others, original data were secured by the Board through replies to detailed questionnaires distributed to a large number of retail merchants, real-estate brokers and others in close touch with local conditions in all parts of the country.

FOOD

Average retail prices of food were slightly more than 5 per cent. higher on June 15, 1919, than on March 15, 1919, and 84 per cent. higher than before the war, on the basis of average prices for the year 1913. The increase within the year ending June 15, 1919, was 14 per cent. These figures cover price changes of 22 articles of food as reported by over 2000 dealers. Since the Bureau's estimate of 84 per cent. increase is for June 15, a slight addition was made by the Board to allow for a possible rise in the last half of the month.

Some of the articles showing the most significant price changes since June, 1918, were onions, the price of which increased 133 per cent.; prunes, 53 per cent.; coffee, 41 per cent.; potatoes, 31 per cent.; cheese, 28 per cent.; eggs, 26 per cent.; butter, 24 per cent.; lard, 23 per cent.; sugar, 16 per cent.; milk, 15 per cent.; and flour, 12 per cent. The prices of chuck roast and plate beef decreased 5 per cent.; of corn meal, 6 per cent., and of navy beans, 31 per cent. Compared with June, 1913, the average prices of the following articles in June, 1919, were 100 per cent. or more higher: Sugar, pork chops, ham, bacon, potatoes, corn meal, flour and lard.

SHELTER

Reports regarding rent conditions were received from practically all of the cities in the United States having a population of 50,000 or over, and from a number of smaller places. Of more than 300 statements from persons closely in touch with rents as paid by wage-earners in these separate cities, only one recorded a decrease in this item since March, 1919. In many places rents were still rising, although few pronounced increases were found. Frequently the larger increases reported in July were in those localities where former advances had been least, indicating that the tendency to a leveling of the total increase in rents the country over, which had been evident in March, was still in progress in July.

The estimate of 28 per cent. as the average rise in rents since 1914 is, therefore, of more general application than that of 22 per cent. up to March, 1919; of 20 per cent. up to November, 1918; or of 15 per cent. up to June, 1918, as given in previous reports by the Board. Between March, 1919, and July, 1919, the average increase in rents for the country as a whole was about 5 per cent. These are averages for all sections of the country and reflect a considerable variety of rent conditions.

The opinion was general that rents would continue to rise, since, on account of the abnormally high cost of construction and maintenance, the number of houses being built is inadequate to meet the demand for accommodations. In some places the housing shortage had stimulated popular "own your own home" campaigns and various schemes to assist people to build.

CLOTHING

The advance of 100 per cent. in the cost of clothing is larger than that of any other of the major budget items. The average outlay for a family's clothing needs in July, 1919, was 10.5 per cent. more than in March, and 3.6 per cent. more than in November, 1918, when the previous high peak of clothing prices was reached. Since the summer of 1918, the average cost of clothing had advanced 13 per cent. These increases were obtained by combining the percentages of change in the cost of the separate articles according to their relative importance in the total clothing budget.

Quotations for 29 types of most commonly used yard goods and wearing apparel were secured from 146 dealers in 43 cities. For every article the average price was higher in July, 1919, than in March. As compared with November, 1918, changes varied, but the most important were upward. Cotton and woolen yard goods, overalls, knit and muslin underwear, and the cheaper grades of work shirts, although higher in price than in March, were slightly lower than in November.

Prices of yard goods increased more than did prices of made-up garments in the five-year period since 1914, but the cost of women's shoes advanced 131 per cent.; women's gloves, 125 per cent.; women's knit underwear, 120 per cent.; women's coats, 116 per cent., and women's hosiery, 104 per cent. between July, 1914, and July, 1919. In every case these marked the highest points reached since 1914. Several articles of men's clothing also cost 100 per cent. more than before the war. Dealers very generally expressed the opinion that clothing prices were likely to go still higher.

FUEL, HEAT AND LIGHT

No important change in the combined cost of fuel, heat and light between March and July, 1919, was indicated. While there was a small increase in the cost of anthracite, there was a corresponding decrease in the price of bituminous coal. Prices of other items in this group were practically unchanged. The average increase in the total cost of fuel, heat and light combined, therefore, is again placed at 57 per cent., as in the March study.

Retail price quotations on anthracite and bituminous coal for household use, secured in July, 1919, from 97 dealers in 43 cities, were analyzed. These showed changes since last March for anthracite varying from a 9 per cent. increase in Boston, to a 9 per cent. decrease in Charleston,

S. C., and an average increase for the country as a whole of 1 per cent. to 2 per cent. The total increase since the beginning of the war in 1914 was between 54 per cent. and 57 per cent. The increase for bituminous coal within the five-year period was 55 per cent.

Coal dealers were generally of the opinion that the price of anthracite would advance further within the next few months, but there were suggestions that the price of bituminous coal might drop. Average retail prices of coke and wood fell in a number of cities, but in others they advanced; for the entire country no significant difference was indicated. Few important changes in the cost of gas and electricity to small consumers between March and July, 1919, were reported, although the tendency of rates was upward.

SUNDRIES

Reports regarding carfare, one of the principal items in the sundries group, were received from 143 cities. In 121 of these there had been no change between March and July, 1919, and in 3 there was a decrease. Such increases as occurred were small. Changes in carfare the country over were, therefore, unimportant. The retail price of tobacco was somewhat higher in July than it had been in March, partly because of increased taxes. The tax on candy, soda water and ice cream as well as on toilet preparations and drugs also contributed to raise the cost of these items. Household furnishings and supplies were in many instances higher in July than they had been in March. On the other hand, the prices of admission to amusement places, of reading materials, and of doctors' services remained about the same. Postage decreased.

From these separate estimates it appears that there was a small increase in the cost of all sundries combined between March, 1919, and July, 1919. This has been placed at 5 per cent. It must be understood, however, that families vary more in their expenditures for sundries than for any other of the budget items and that no estimated change can be said

to be typical. The estimate of 5 per cent. increase is based on a wide variety of combinations and is as representative of the change that has occurred as any that can be reached. This brings the total increase in the cost of sundries since 1914 to 63 per cent. as contrasted with 55 per cent. in March, 1919, and November, 1918, and 50 per cent. in June, 1918.

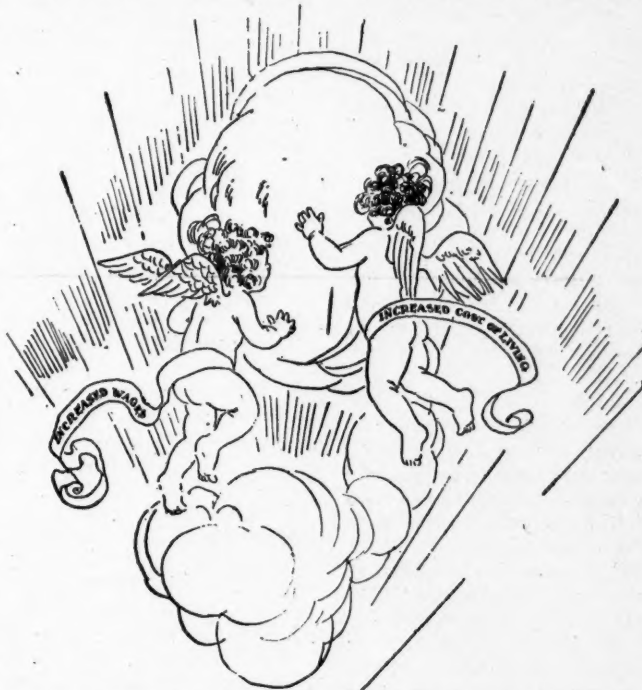
THE COMPLETE BUDGET

A summary of changes in the cost of living as determined in the four surveys made by the National Industrial Conference Board is given in the table below:

INCREASE IN THE COST OF LIVING FOR WAGE-EARNERS IN AVERAGE AMERICAN COMMUNITIES, BETWEEN JULY, 1914, AND JULY, 1919, BY SEPARATE BUDGET ITEMS

Budget Items	July, 1914, to June, 1918, per Cent.	July, 1914, to November, 1918, per Cent.	July, 1914, to March, 1919, per Cent.	July, 1914, to July, 1919, per Cent.
All items.....	52.3	65.9	61.3	70.8
Food.....	62	83	75	85a
Shelter.....	15	20	22	28
Clothing.....	77	93	81	100
Fuel, heat, and light.....	45	55	57	57
Sundries.....	50	55	55	63

a Based on an increase of 84 per cent. up to June 15, 1919, as reported by the United States Bureau of Labor Statistics.



THE HEAVENLY TWINS—THEY GO SKYWARD TOGETHER

A complete report containing the evidence from which these conclusions were drawn—the fourth of a series on this subject—will be issued by the Board within a few weeks.

[The following notes may be made on the foregoing to fit the figures to the mine worker's conditions. Prior to the war the average mine worker—contract man and day man—might have been figured roughly as earning \$100 per month. The rent varied greatly. In the West it was more than in the East; in the villages, towns and cities it was usually more than in the company mining town. Probably it averaged about \$10 per month. This is about 10 per cent. instead of 17.7 as in the table given in the foregoing article shows. Fuel, heat and light probably amounted to barely 2 per cent. Therefore the following seems a fair adaptation of the table to the conditions of the mine worker:

Budget Items	Relative Importance in Family Budget, per Cent.	Increase in Cost Between July, 1914, and July, 1917, per Cent.	Increase as Related to Total Budget, per Cent.
All items.....	100		73.0
Food.....	49.5	85	42.0
Shelter.....	10.0	0	0.0
Clothing.....	15.1	100	15.1
Fuel, heat and light.....	2.0	57	1.2
Sundries.....	23.4	63	14.7

The mine worker has therefore sustained a greater increase in cost of living than the ordinary workman because a larger percentage of his earnings has, for many years, been devoted to the items clothing, food, sundries, and these have had relatively the larger increases in price. The difference is, however, small—73.0 as against 70.8 per cent. The calculation just made is quite empirical. It may be rightly objected that it takes no account of the cost of supplies which if figured would reduce the amount spent on clothing, food and sundries and bring the miners' increase in cost of living to a lower figure. Powder being the principal item in the cost of supplies has not increased in price to the miner, so perhaps after all the figure given by the National Industrial Conference, 70.8 per cent., would fit the miner well and 73.1 would fit the day worker more closely, though again it must be admitted we do the day worker more than justice when we put his rent charge at only 10 per cent.—before the war he must have paid more and, as we have seen, reducing the percentage of rent charge raises, instead of lowers, the rate of increase of the whole budget, for a man who pays little or no rent expends more on food, clothing and sundries which have made the largest advances. The increase in the cost of the mine workers' living lies somewhere between 70 and 75 per cent. The disposition is to place it higher than that figure, basing the increases not on the whole budget but on the cost of certain articles of clothing and not on the same article but on some other article of greater intrinsic value that the well being of the mine worker has caused him to substitute for the less valuable article.—*Editor.*]

General Labor Review

Rarely has the labor situation been more full of event than today. At Wilkes-Barre the representatives of the anthracite members of the union as a whole have proved even more radical than the union men of Indiana. Where Indiana wanted a minimum of 40 per cent. for all employees and 61 per cent. for surface workmen, the Tri-district convention in the anthracite field seeks 60 per cent. for everyone. The anthracite region, it was hoped with reason, would not approve the demand for the 6-hour day and 5-day week. However, it did, when the time came. There is plenty of room for a second and soberer thought before Apr. 1, 1920, when a new anthracite scale is to be written.

In West Virginia, the mine workers of the New River field have accepted the tentative agreement by which wages remain at the same level (with some trifling reductions, it is true), hours remain unchanged, discipline is more definitely provided and the price of domestic coal is increased, the contract to remain in force until the Central Competitive region makes a new contract when the New River mine workers will receive a second document, the provisions of

which will accord with those of the agreement made by the Central Competitive region. The Williamson or Thacker nonunion fields on Aug. 14 decided to advance wages and shorten hours to eight per day.

In Illinois and British Columbia, the United Mine Workers of America are resuming control over the unorganized insurgents in one case and the "One Big Union" in the other. The old union men of British Columbia are using kidnapping methods to overcome the members of the O. B. U. while the insurgents of Illinois are using violence to prevent the regular union men from working.

In Kansas the United Mine Workers are led by the extremely radical Alex. Howat, the district president. No one could well be more radical than he. There is no fear that while Howat is in the saddle any more socialistic man will be found to lead in opposition to his dictates. The conservatives are few in number, so Howat has just been promised support "to the last ditch."

The tridistrict convention (districts Nos. 1, 7 and 9), at which all members of the United Mine Workers of America in the anthracite region are represented, met at Wilkes-Barre, Penn., on Aug. 19. The presiding officer at the opening session was Thomas L. Kennedy of the Hazelton region. It seems to have been feared that none of the district presidents in the anthracite region could hold the meeting in line seeing that the insurgents in District No. 1—the northern field—were present in numbers and might be expected to "insurge" at any moment.

On Aug. 3, seven local unions had met in the convention city and had voted that they would pay no more dues to the organization until some determination had been made of the electoral dispute. As has been already stated, the insurgents claim that ballots have been changed. Because of the presence of the insurgents, pressure was brought to bear on the acting international president, John L. Lewis, to come to Wilkes-Barre and preside over the convention, and eventually he came.

The mine workers' representatives declared for a 60 per cent increase, not over the old contract rates but over the present war-bonus rates now in operation. There is a general belief that the demand for shorter hours and a shorter week will not be persisted in when final action is taken at Cleveland, Ohio. The anthracite region is suffering acutely from a shortage of men, the mines work every day in the week, and still the market is not quite comfortably assured that there will not be found a shortage when winter comes. The mine workers of the anthracite region, therefore, will show themselves quite indifferent to public need if they shorten their working time.

They do not view the matter as do the men of the Central Province where shorter time would assure an overwhelming coal shortage such as would make the mining industry as steady as in Great Britain—until, of course, West Virginia, Virginia and eastern Kentucky contrived to increase their tonnages to handle the demand that would be made on those sections.

But what could the district do with the demands of the policy committee for a short day and a short week before them and in view of the unpleasantness which recently occurred when certain companies, finding the miners had all gone home and there was no coal to haul or prepare, closed down at about 6 hours? This trouble, however, could be cured if the miners and laborers would consent to work the contracted length of time, namely an 8-hour day. William Green, the secretary of the union, on Aug. 20 declared for the shorter day, asserting that just as much coal could be obtained with the less lengthy days as with one of 8 hours.

It is rumored that meetings of foreigners have been held at which it was shown that the miners who were planning to return to Galicia, Italy, Russia and Poland were being deterred by the high price of everything in those countries. Foreigners quite generally, deploring the high cost of living in America, have overlooked the fact that in Europe the cost of living has risen much more. Whereas a competency here was formerly a small fortune in Europe, a competency in Europe is now a small fortune here, so much lower are our rates of living.

They Can't All Have All of It, So Why Not Divide It Fairly?



The cartoonist shows the production of 1919 as a leg of mutton, with the street-car conductor, the railroad man and the miner all striving to reach up and get it. They can't all have all of it, so why not divide it fairly? There is only so much of it, so raising wages all around won't make any one get any more of it than they would with the present wages. If some get more wages than others by striking or violence, they will get more than their share and some will do without. The only way for us all to get more mutton is by raising a bigger sheep.



DISCUSSION *by* READERS

EDITED BY JAMES T. BEARD

Unpractical Examination Questions

Letter No. 2—In the issue of *Coal Age*, July 24, p. 165, the editor requests a practical solution of a question asking for the size of two airways whose perimeters are equal and the sectional area of one of them half again as large as that of the other. He states, in reference to this and other questions given on the same page, that one or two of them are hardly capable of a practical solution.

To my mind, there would never be an airway having dimensions that would fulfill these conditions and which would be of use in mining practice. We can assume, for example, a hexagon whose sides are each 6 ft. as being the cross-section of an airway. Its perimeter is 36 ft. and its area 93.53 square feet.

Then, taking two-thirds of this area as the sectional area of a rectangle, we must find a rectangle having a perimeter of 36 ft. and a sectional area of $\frac{2}{3}(93.53) = 62.35$ sq.ft. By trial, I find this rectangle to be 4.68 x 13.32 ft., which is therefore the cross-section of the required airway.

ANDREW O. BAIN.

McKeesport, Penn.

Letter No. 3—Referring to the examination questions answered in *Coal Age*, July 24, p. 165, I notice that the reply to the second question on that page states, "We should be glad to receive a practical solution to this question." The question asks for the size of two airways, whose perimeters are equal, while the area of one is half again as large as that of the other.

Such a question as this is only interesting as a mathematical problem, and I heartily agree with the editor that there is no justification for asking the question in a mining examination. The only excuse for asking such a question is the fact that it may serve to emphasize the practical advantage of a circular airway over a rectangular one, in respect to ventilation, it being well known that the circle has a greater area, for the same perimeter, than either a square or a rectangle, and likewise, the square a greater area than a rectangle.

The advantage gained in ventilation by reason of these facts is the lesser amount of rubbing surface per square foot of area, first, in the circular airway and, second, in the square airway. However, practical considerations regarding the driving, timbering, etc., of mine entries, debar the general use of airways of the circular form, and it is necessary to forego the advantage in respect to ventilation and adopt the rectangular form of cross-section for all mine roads and airways.

In the solution of this problem, let us first compare the circle with a rectangle having an equal perimeter, assuming the area of the rectangle is two-thirds that of the circle, since it is plainly evident that the circle

must have a greater area than a rectangle, for the same perimeter. Calling the diameter of the circle d and the two sides, the height and width, of the rectangle, a and b , respectively, we have, from the conditions of the problem, the following:

$$\text{Perimeter, } 3.1416 d = 2(a + b) \quad (1)$$

$$\text{Area, } \frac{2}{3}(0.7854 d^2) = ab \quad (2)$$

Now, for the sake of simplicity, let us assume the diameter of the circle as $d = 10$. Substituting this value for d in equations 1 and 2, we have,

$$a + b = 15.708 \quad (3)$$

$$\text{and } ab = 52.36 \quad (4)$$

Again, substituting, in equation 3, for b , its value taken from equation 4, we have

$$a + \frac{52.36}{a} = 15.708 \quad (5)$$

Multiplying throughout by a and transposing gives the equation

$$a^2 - 15.708 a + 52.36 = 0 \quad (6)$$

Finally, solving this quadratic equation gives, for the value of one side of the required rectangle, either $a = 10.908$, or $a = 4.8$; and substituting these values for a , in equation 3, gives for the corresponding values of the other side of the rectangle, $b = 4.8$; or $b = 10.908$, making the required rectangle 4.8 x 10.908 ft.

Proof—The perimeter of this rectangle is $2(4.8 + 10.908) = 31.416$; and its area is $4.8 \times 10.908 = 52.36$, which is $\frac{2}{3}$ of the area of the circle whose diameter is 10 and perimeter $3.1416 \times 10 = 31.416$. The area of the circle is $0.7854 \times 10^2 = 78.54$, and $\frac{2}{3}(78.54) = 52.36$.

Let us now compare a square and a rectangle having equal perimeters and assume the sectional area of the rectangle is two-thirds that of the square. Denoting a side of the square by s and the two respective sides of the rectangle by a and b , we have the following:

$$\text{Perimeter, } 4s = 2(a + b) \quad (7)$$

$$2s = a + b \quad (8)$$

$$\text{Area, } \frac{2}{3}s^2 = ab \quad (9)$$

For the sake of simplicity, assume for a side of the square $s = 9$, and substitute this value for s , in equations 7 and 8, which gives

$$a + b = 18 \quad (9)$$

$$\text{and } ab = 54 \quad (10)$$

Now, combining equations 9 and 10 and solving for a , we have

$$a + \frac{54}{a} = 18 \quad (11)$$

Multiplying throughout by a , as before, gives the quadratic equation,

$$a^2 - 18a + 54 = 0 \quad (12)$$

Finally, solving equation 12 gives for one side of the required rectangle $a = 14.196$; or $a = 3.804$, and substituting these values in equation 9, we find for the other side of the rectangle, $b = 3.804$; or $b = 14.196$, making the required rectangle 3.804 x 14.196 ft.

Proof—The perimeter of the square is $4 \times 9 = 36$ and its area $9^2 = 81$. The perimeter of the rectangle just found is $2(3.804 + 14.196) = 36$ and its area $3.804 \times 14.196 = 54$, which is two-thirds that of the square, $\frac{2}{3}(81) = 54$.

A. C. CALLEN,
Prof. Mining Engineering,
Morgantown, W. Va. West Virginia University.

[Practically the same solution has been received from John H. Turner, North American Colliery, Ltd., Coalhurst, Alta., Can., who finds that "a circular airway 8 ft. in diameter has an equal perimeter and an area one and one-half times larger than a rectangular airway 3.84 x 8.73 ft. in section. The above is a practical solution of the question, but the question itself is not a practical one."

Another solution by August Carmazi, mine foreman, Avella, Penn., finds, by a hit-and-miss method that he does not explain, that the two following airways have equal perimeters, while the second airway has an area only two-thirds that of the first. The first airway is 9 x 10 ft. in section; perimeter, $2(9 + 10) = 38$ ft.; area, $9 \times 10 = 90$ sq.ft. The second airway is 4 x 15 ft. in section; perimeter, $2(4 + 15) = 38$ ft.; area, $4 \times 15 = 60$ sq.ft., which is two-thirds the area of the first airway.

The two following letters give solutions by somewhat different methods.—EDITOR.]

Letter No. 6—Kindly let me submit the following answer to the question given in *Coal Age*, July 24, p. 165, asking for the dimensions of two airways having equal perimeters, the sectional area of the second airway being two-thirds that of the first. My solution is as follows:

Indicate the side of a square airway by x . Now, increase and decrease this side, in turn, by an amount indicated by a , which will give a rectangle $(x + a) \times (x - a)$. Evidently, the perimeter of this rectangle is equal to that of the square whose side is x .

Now, by the condition of the problem, the sectional area of the rectangle is two-thirds that of the square, which gives the equation

$$\begin{aligned}\frac{2}{3}x^2 &= (x + a)(x - a) \\ 2x^2 &= 3(x^2 - a^2) \\ x^2 &= 3a^2\end{aligned}$$

$$a = \frac{x}{\sqrt{3}} = \frac{x}{1.732} = 0.577x$$

Finally, assuming the square airway is 9 x 9 ft., in section, the required increase and decrease, a , in these dimensions, in order to form a rectangle having an equal perimeter and an area two-thirds that of the original airway, is $a = 0.577 \times 9 = 5.193$ ft. The longer side of the required rectangle is, therefore, $9 + 5.193 = 14.193$ ft.; and the shorter side, $9 - 5.193 = 3.807$ ft. Therefore, the required rectangle, in this case, is 3.807 x 14.193 ft.

Proof—The perimeter of the square airway is $4 \times 9 = 36$ ft. and its area $9 \times 9 = 81$ sq.ft. The perimeter of the rectangle found is $2(3.807 + 14.193) = 36$ ft.; and its area $3.807 \times 14.193 = 54$ sq.ft., which is two-thirds that of the square, $\frac{2}{3}(81) = 54$.

J. Q. McNALT, Div. Engineer,
Canon City, Colo. Colorado Fuel and Iron Co.

Letter No. 7—To find two rectangular airways having equal perimeters, the sectional area of the second air-

way to be two-thirds that of the first airway, I prefer to use a method of ratios.

The first step in this method is to find two simple numbers whose sum shall be equal to that of two other numbers, while the product of the first two is two-thirds that of the second two numbers. For example, $1 + 4 = 5$; and $2 + 3 = 5$. Again, $1 \times 4 = \frac{2}{3}(2 \times 3)$.

MULTIPLYING BY ANY DESIRED MULTIPLE

Now, taking these numbers to represent the relative heights and widths of two rectangular airways having equal perimeters and the sectional area of the first being two-thirds that of the second airway, we can adopt any desired multiple of these numbers to represent the required rectangles. For example, using a multiple of 4, the height of the first airway is $4 \times 1 = 4$ ft., while its width is $4 \times 4 = 16$ ft. The size of this airway is, therefore, 4 x 16 ft. in section; its perimeter is $2(4 + 16) = 40$ ft. and area, $4 \times 16 = 64$ sq.ft.

Again, using the same multiple 4, the height of the second airway is $4 \times 2 = 8$ ft. and its width $4 \times 3 = 12$ ft., making the size of this second airway 4 x 12 ft., in section; its perimeter, $2(8 + 12) = 40$ ft. and area, $8 \times 12 = 96$ sq.ft. The sectional area of the first airway is, therefore, two-thirds that of the second airway, since $\frac{2}{3}(96) = 64$ sq.ft.

Using any other multiple desired, it is possible to find any two other rectangular airways that will fulfill the conditions of this problem, by means of the same ratios as given previously. This appears to be a practical solution and one that will always give the desired results.

DAVE HUNTER.

Washoe, Mont.

Promotion of Ambitious Workers

Letter No. 1—Recent references to the uneasiness of labor and the reading of two books discussing the labor question have convinced me that one chief cause of what is styled "disloyalty on the part of employees" is the failure of the management of many large corporations to recognize that there are ambitious men who have qualified themselves for positions above that which they now occupy, and who desire promotion when vacancies occur.

Not long ago, a man of my acquaintance, who had such an ambition and had qualified himself and secured a first-class, mine-foreman's certificate, was greatly disappointed when an outside man was chosen to fill a vacancy in that position in his company.

SUPERINTENDENT OVERLOOKS AMBITIOUS WORKER

When approached on the matter, later, the superintendent remarked that he did not know that the man desired promotion, although he had worked for the company for 15 years and given them the best portion of his life, in successful service. This is but one example of many ambitious workers who, by study and application, have qualified themselves to fill higher positions than those they occupy, but whose efforts in that direction have not been recognized by their superiors in office.

It is my belief that, if managers would examine the appointments made by their officials, many times they would find that personal friendship, acquaintance or relationship was the controlling factor in the making of the appointment, rather than efficiency and fitness for

service. To the management, the position in question may seem of little importance, and yet it may be the goal of some employee's desire, and the disappointment that follows his failure to secure promotion almost invariably leads to a spirit of enmity. His work, from that time on, is performed in a matter of fact sort of way. The worker has lost his interest and fails in many ways to coöperate in the same spirit as formerly.

SYSTEMATIC PLAN OF PROMOTION

Some four or five years ago, I read in *Coal Age* a plan that was adopted by one of the great railroad systems in this country, in order to secure and maintain a spirit of loyalty among its employees. Briefly, the plan was one by which a notice of a vacancy was to be posted throughout the division in which such vacancy occurred, so that employees who were eligible for promotion to the position would have an opportunity to ask for and fill out a blank to be submitted to the general manager. The examination of the application so made would show the qualifications and fitness of the candidate for the position. Then, when the appointment was made, the superintendent of the division would be advised of the candidate's fitness for the place.

This plan has now been tried many years and has developed a spirit of coöperation among the employees of that system. The working of the industrial organization has been much improved. Things move smoothly, because each employee, no matter how low his station, feels that he has the assurance that the future has something tangible in store for him who strives to do his part, and promotion will be his ultimate reward.

Altoona, Ala.

FAIRPLAY.

Installing High-Tension Lines

Letter No. 1—Referring to the inquiry of "Operator," *Coal Age*, July 10, p. 73, regarding the best means of transmitting electric power a distance of nearly two miles underground with the greatest degree of safety and at the least expense, permit me to say that high-tension power lines when properly installed in a mine, should be as safe as when the lines are conducted over the surface to a borehole, as suggested in the reply to this inquiry.

In my own experience, where power lines are properly laid in a box or tile conduit, in a ditch at the side of the road, there is far less chance of accidents resulting than when the wires are hung on poles on the surface. I believe, also, that the work of laying the lines in a conduit, including the expense of ditching, will generally prove less expensive than to provide the necessary poles for carrying the wires over the surface and to bore the holes required to conduct them into the mines. Of course, much will depend on the nature of the mine bottom and the width and condition of the roadways in the mine. It is not stated in the inquiry whether this mine is dry or wet.

ADVANTAGE IN USE OF ALTERNATING CURRENT

In the long-distance transmission of power, alternating current should be used between the power house and the point of distribution in the mine. By the use of alternating current, the first cost for copper will be greatly reduced. At points where the power is to be distributed to different sections of the mine, a small room should be excavated in the solid strata. This

room should be lined with cement or brick and a wooden floor provided, which will make the place safe for the installation of the transformers required to step down the voltage of the current for use at the working face.

From this central station, the three-wire system should be employed to conduct the current to the machines. These wires must be hung on the side of the roadway opposite to that where the men travel. Many state mining laws prohibit the carrying of electric wires in a return airway. In that case, the wires must be carried through openings made in the crosscuts so as to enable them to reach the places where the power is to be used.

PRECAUTIONS TAKEN IN GASEOUS AND WET MINES

Gas-tight, explosion-proof switch boxes should be provided at all points where the trailing cables are attached, and the switches should be properly grounded. A competent electrician should carefully inspect such installations at least once every 24 hours and report their condition.

In a wet mine instead of carrying the power line in a ditch, as just explained, it should be installed in a box, fixed to the timbers and roof, or properly supported on the rib, at one side of the entry and close to the roof. This box should always be located on the opposite side of the road from where the men travel. The box should either be grooved to receive the cable, or the latter should be packed in the box so that it will fit snugly in its place.

Wherever high-tension power lines are conducted into a mine, either through ditches or conduits or in boxes at the roof, danger signals should be posted at frequent short intervals, warning persons of the presence of the high-tension cables.

Chase River P. O.,

MATTHEW STAFFORD.

Vancouver Island, B. C.

Bolshevism in America

Letter No. 3—I have read with much pleasure the Foreword in the issue of *Coal Age*, July 3, and the excellent letter on the subject of "Bolshevism in America," on page 31 of the same issue. I wish to endorse the sentiment expressed in the Foreword that Bolshevism is a passion.

None of the Bolsheviks who have been prominent in affairs have shown their ability to make clean public records for themselves. On the other hand, their methods are clearly destructive both of life and property. Thousands of human lives have been sacrificed through their reckless passion and thirst for blood, and millions of dollars worth of damage has been done to crops, dwellings and warehouses stored with supplies for our soldiers and the allies.

Contrary to all human morals, Bolshevism has never furnished protection to the people under its sway, but the most fiendish methods have been devised to destroy, maim and kill innocent people. Its devotees ever indulge in wild and prolonged debauch, which must eventually prove their downfall and that of the government they represent. To such an extent has this become recognized that even those who know nothing of political economy, as well as the saner class of socialists, are gradually coming to understand the utter hopelessness of the cause of Bolshevism.

To put confidence in a Bolshevik government, expecting and looking for the protection of home and property, would be like going into a gaseous mine with a naked light. It goes without saying that if the governments of the world were of this order, chaos would reign. Men would tear and rend each other to pieces, and the few survivors would die under the tottering ruins of civilization. Let those whose thoughts roam toward Bolshevism think seriously of these things.

Clinton, Ind.

PATRIOT.

Living Conditions at Mines

Letter No. 7—It is interesting, indeed, to read the many letters that appear in *Coal Age*, from time to time, regarding the safety and welfare of mine workers. In no industry are the workers more entitled to consideration than in that of mining coal, because of the dangers they must face continually in the performance of labor on which all other industries depend.

In reading letter No. 6, by Joseph R. Thomas, *Coal Age*, July 17, p. 115, I was more than pleased. Mr. Thomas sounds the keynote of action when he says, "Success mean coöperation in establishing a community of interests, to the end that employers and workers in every industry shall strive for the common good." True it is that when employer and employed strive for the common good they create a "community of interests." Nowhere has this been more clearly demonstrated than in the efforts of the Colorado Fuel & Iron Co., during the past four years, in which they have operated their mines under the Industrial Representation Plan. While many people believe that the plan has proved more than could have been expected, there are a few grumblers, of course, who would be glad to see the scheme abolished.

SUCCESS OF INDUSTRIAL REPRESENTATION PLAN

Under the Industrial Representation Plan, there is a joint committee of six members appointed, three of whom represent the company and three the employees. The committee is known as the Health, Sanitation and Housing Committee and the name outlines their duties. At their own option, this committee can bring up for discussion, at the joint conferences of the company and its employees, any matters relating to health, hospitals, physicians, nurses, occupational diseases, garbage disposal, street cleaning, wash-houses, locker-rooms, housing, rents, homes, gardens, fencing, etc.

As chairman of the committee and a representative of the employees, I am pleased to state that the report of our last inspection shows that the superintendents of the different camps are carrying out the company's program, in every detail. A few years ago, in these same camps, this and other coal companies sold or rented lots to their employees who built their own homes, largely out of old railroad ties, with black-powder cans for shingles on the roof. Generally, a bad smelling pig pen occupied the rear of the lot. The odor from these pig pens could be detected a distance of a mile or more during the summer months. One would be surprised to observe the difference that the company's industrial plan has made in a few years, in its operation in these camps.

For a number of years, the Miners' Union was very active in Colorado and, at one time, was in control. After observing the activities of the union, for a long period, the Colorado Fuel & Iron Co. decided that the

only solution of the problem of securing proper health, sanitation and housing for the men was by the adoption of what has since been known as the "Industrial Representation Plan," previously mentioned. The improvements accomplished under this plan are a credit to the company, who have made extraordinary efforts to beautify the camps and eradicate whatever creates filth, flies and disease.

Certainly, no person in his right mind could advocate the abandonment of a plan that produced such results in so short a time, and it is safe to say that whatever may occur in the future to hinder the progress of this company, no other plan will be adopted and, should striking miners desire to return to the mines, they will be welcomed and given work under the same plan, as the company believes that no other agency is capable of caring for the health, sanitation and housing, in their camps, and guaranteeing to their employees good living conditions.

ROBERT A. MARSHALL.

Farr, Colo.

Preservation of Mine Timber

Letter No. 1—Kindly permit me to refer to the inquiry of "T. L.," *Coal Age*, July 24, p. 164, regarding the best means of preserving mine timber, and to express some surprise that the reply by the editor does not mention the method of creosoting timber to eliminate the primary cause of its destruction.

Timber that is partly decayed becomes an increased fire hazard, and a breeding place for insects. Decay also weakens the timber, reducing its mechanical strength to where it cannot stand the strain of the roof pressure. Thus, decay causes, first, the weakening of the timber and mechanical failure; and, second, increases the inflammability of the wood and promotes its destruction by insects.

ADVANTAGES IN CREOSOTING MINE TIMBER

Timber if creosoted before being taken into the mine retains its natural condition and mechanical strength, assuring the full period of its mechanical service. Creosoted timber when dry, being no more inflammable than untreated sound wood, the treatment acts as a fire retardant, as compared with aged, untreated and partly decayed timber. The injection of the creosote poisons the wood, thus preventing the development of decay; likewise, it also prevents attack by wood-destroying insects. Hence, the three chief conditions complained of are overcome by proper treatment with coal-tar, creosote oil.

In order to obtain satisfactory results, it is necessary to properly prepare timber for this treatment, by stripping off the bark immediately after the wood is cut and then seasoning until the moisture content has been reduced 25 per cent. of the oven-dry weight. Treatment by the open-tank process is more practical, under the average conditions prevailing at mines. It consists of immersion in hot and cold baths of refined coal-tar, creosote oil, and should be recommended for treatment of mine timber.

I note with interest, the reference to gunite. Undoubtedly, it is a protection against fire and also, perhaps, against certain insects; but it is by no means a preservative treatment to retard decay.

One of the duties of my position is to make surveys of coal-mine properties for the purpose of ascertaining

what class of timber can be economically creosoted, and the method of treatment most practical for the operation. Although this service is performed in the interest of creosoting, it is not recommended unless fully justified.

Chicago, Ill.

K. C. BARTH,
The Barrett Co.

Safety in Mine Timbering

Letter No. 4—I fully agree with the suggestions that have been offered in regard to making the work of timbering in mines safer. It has been stated that illustrations should be made of the right and wrong methods of framing and setting timber, and that these should be posted in places where men will see and study them. This would impress on many the way in which accidents often occur from improper timbering.

As we all know, it is at the working face where most of the accidents occur, which makes it of the utmost importance that the proper posting of rooms should be explained. In his letter, *Coal Age*, May 15, p. 919, Jesse Hamilton gives some good illustrations of the best methods of framing double timbers so as to develop their full strength. However, in all my mining experience, a derailed car striking a post at the side of the road has never failed to knock out one or more timbers, unless the legs are set in a groove cut in the rib.

To avoid such an occurrence, it has been my habit, in crossbar timbering, to cut a long slip in the rib at the roof, on each side of the road. And, after the crossbar had been placed in each slip and wedged tightly, I would cut the two legs of the right length and set them in place under the bar, driving them as tight as possible. Then, should a derailed car knock out either leg, the crossbar would still support the roof.

TIMBERING WITH STEEL AND OLD IRON RAILS

Referring to the use of discarded iron rails in place of wooden crossbars, as suggested by "Inspector," June 26, p. 1175, it is my experience that the iron rails are all right as long as no squeeze occurs. But when a squeeze takes place an iron rail bends down under the weight of the roof and is very difficult to remove, whereas a wooden crossbar can be cut out and a new timber put in its place. For that reason, the use of iron rails as crossbars cannot be recommended.

At a certain mine in this state, the fan drift is timbered with steel crossbars and legs, bolted together and braced each set against the one next adjoining. The bars and legs are of rail-road iron used on surface roads and, I believe weigh 90 lb. to the yard.

It is remarked by W. H. Noone, in his letter, July 24, p. 163, that "too much publicity cannot be given the safety-in-timbering idea." That has been my thought on many previous occasions when I have drawn attention to points in our own state mining law that would stand revision. One of those points (Sec. 143) has reference to the safe timbering of mines. The law simply provides that such a method of timbering the roof and spragging the coal shall be adopted, in each mine, as will securely hold the roof, sides and face and meet with the approval of the chief inspector of coal mines.

The practical working of this provision of the mine law makes the timbering, in each mine, conform to an agreement made between the mine inspector and the mine foreman or superintendent. Such an agreement

will specify the maximum distance apart and the maximum distance the posts are to be set from the coal. Too often it happens that the mine foreman merely sees that the timbers are set in each place according to this agreement, depending on the miner's ability to take care of himself when this is done.

On the other hand, should a mine foreman find that the roof over a miner is not safe, it is extremely difficult to convince the man that other timbers must be set to make the place secure. The miner does not know the meaning of "maximum," and he thinks that the distances made in the agreement are the proper distances at which the timbers must be set, under any conditions.

The agreement generally provides a distance of seven feet between the coal face and the first row of timbers, so as to allow a 6½-ft. coal-cutting machine to cross the face after being sumped in under the coal. But, even if the foreman does succeed in getting the miner to set a few posts nearer to the face to protect himself, the probability is that the machine runner will knock these out and not reset them after cutting the coal. The chances are 100 to 1 that the machinerunner or the miner will be killed, and the utmost vigilance is required on the part of the foreman to prevent the occurrence of a fatal accident under these conditions.

FIXED TIMBER AGREEMENT UNFAIR TO FOREMAN

Allow me to cite one instance where the coal in a certain mine is overlaid with 35 ft. of sandrock that enables the partings on the road to be driven from 16 to 18 ft. in width, without setting a timber the entire length of the parting, about 350 ft. Under the agreement with the mine inspector, posts are set five feet apart in the rooms, and there is not a break in the roof until the rooms have finished and the pillars have been drawn back about 50 yd. Usually, six pillars are started back at once, and when a cave occurs it covers an area of practically 45,000 sq. ft. Only recently, the force of one of these caves blew a miner 60 ft., cutting and bruising him in a terrible manner.

My claim is that the fixing of a timber agreement between the mine inspector and the superintendent is unfair to the foreman, who finds it difficult to modify the particular conditions. It is well known that too many props, in pillar work, is as dangerous as too small a number, as it means a large territory exposed when the cave does take place.

Before the final adoption of the timber agreement embodied in the law, there was considerable argument between the men representing the state, the miners and the operators; but the objection to the agreement clause, on the part of the operators, was overruled and they were compelled to accept this provision in the law, although they saw the results that would follow.

In closing, permit me to urge that every miner should be carefully instructed in safe methods of cutting timbers and taught the nature of the roof under which he must work. In my opinion, judgment should be used in setting mine timbers, according to the conditions existing in the mine, regardless of any fixed agreement. Most men will allow that it is the painstaking and watchful care of the mine foreman that has been the chief cause in the reduction of the accident list, in coal mining. Having full charge of the mine, the foreman's authority should not be limited by an agreement in respect to the method of timbering.

_____, Colo.

MINE FOREMAN.



INQUIRIES OF GENERAL INTEREST

ANSWERED BY JAMES T. BEARD



Markers on Mine Trips

Some time ago, at a mine foremen's meeting, a discussion arose about the best kind of marker to be used on the rear of trips and some favored light and others alarm bells or gongs, in the mine. In my opinion, the use of any of these devices has not proved to be entirely satisfactory and safe.

In the mine in which I work, a steam locomotive is used on the main haulage road, which is often so filled with smoke that one can scarcely see the rails when walking on the road. Under such conditions, it is clear that even a strong light on the rear of the trip could not be seen at a safe distance. Moreover, should the air be clear on the entry, a bend or sharp curve might hide the light and cause an accident.

There are bells and gongs that are operated automatically by the movement of the car; but it often happens that these are not heard a great distance from the moving trip. For that reason bells and gongs are not wholly satisfactory, at the best. In our mine the cars make more noise than a dozen of such bells and gongs. I believe that if a good gong could be operated like an alarm clock, it would give out a shriller sound than when its operation depends on the jar or movement of the car.

Where men are obliged to travel a haulage road, it is important that a suitable alarm should be used at the head of the trip to warn them of its approach. The sound should be heard at a distance of, say 300 ft. to permit the men to reach a place of safety before the trip overtakes them. If a horn, such as is used on automobiles, could be employed, it would be a good thing, as the sound of a horn would probably be heard at a safe distance.

I would like to see a good discussion on this matter, in the columns of *Coal Age*, and learn the opinion of its many readers, who will probably have some good suggestions to make.

J. J. S.

Fern Glen, Penn.

The conditions described by this correspondent as existing in his mine are extremely dangerous and should not be tolerated. First, a steam locomotive should not be used on a main haulage road in a mine, unless under exceptional conditions that would provide good ventilation throughout the length of the road, and render harmless and sweep away the smoke and gases generated by the locomotive.

Second, men should not be permitted to travel on a haulage road where mechanical haulage is in operation. Even in mule haulage the practice is dangerous. In any case, there should be an ample clearance at the side of the road that would enable men and animals to pass the moving cars in safety whenever it is necessary for them to travel the haulage road. Safety holes cut in

the rib are good, but often cannot be found or reached in time to avoid an accident.

Automatic gongs and bells are the only devices used at present, to our knowledge, and we shall be glad to hear from our practical readers any suggestions that they are pleased to give.

Work and Strength of a Mine Mule

We have always employed mules in our mine, and conditions are such that we shall probably continue their use for some time to come, in preference to installing mechanical haulage. Our mules will average, say, 12 or 13 hands in height and perhaps 1200 lb. in weight. I am anxious to secure a few data giving an idea of the average work that may be expected of a good mine mule and its strength to pull a loaded car out of a dip in a heading or chamber. I want to ask what should be considered as the limiting grade on a haulage road, in mule haulage. Also, can you give me the approximate relative cost of mule and motor haulage, under ordinary conditions, in coal mining?

_____, Iowa.

SUPERINTENDENT.

For the purpose of estimate, it is customary to assume that the average work performed by a good mine mule, under ordinary conditions, will equal 6 ton-mile-hours. That is to say, a mule that is kept in good condition in a mine may be expected to haul $(8 \times 6) \div \frac{1}{4} = 192$ tons, a distance of $\frac{1}{4}$ mi. over a good road, in an 8-hr. working day.

The strength of a good mule when exerted to start a loaded car from a dip heading can be estimated as being at least equal to the weight of the mule, provided the grade is not too steep. For example, a 1200-lb. mule may be expected to exert a pull of 1200 lb., in starting a load from a dip not exceeding, say 3 per cent. But the pull exerted by the mule will decrease rapidly on steeper inclinations. Assuming the track and grade resistance, in starting, as 120 lb. per ton of gross weight, on a 3 per cent. grade, a good mule should be able to start a load of $1200 \div 120 = 10$ tons, more or less. However, a mule cannot be expected to maintain this pull longer than to start the load. Traveling at a speed of, say, 4 mi. an hour, it is estimated a mule can exert a pull equal to one-fifth, or even one-fourth its weight on short hauls, without overtaxing its strength.

The limiting grade in mule haulage should not exceed 3 per cent. For short distances, however, a steeper grade is permissible, particularly if the mule has the advantage of a run for the grade.

The relative cost of mule and motor haulage has been estimated to be 3¢., per ton-mile for mules, as compared with 1¢., per ton-mile for motor haulage, making no allowance for upkeep of cars and rack.



EXAMINATION QUESTIONS

ANSWERED BY
JAMES T. BEARD



Alabama First Class Examination, Birmingham, July 21-24, 1919

(Selected Questions)

Ques.—In mines having extremely tender roof, state what precautions you would adopt when introducing the various types of mining machines, to insure the safety of employees and economy of operation.

Ans.—Machine mining, under tender roof, requires the adoption of a systematic method of timbering the working faces. The system used must be adapted to the conditions in the mine and the type of machines employed. Only competent machinerunners should be engaged in the work of cutting the coal. The posts should be set staggered, in rows parallel to the face of the coal and at distances apart not exceeding 3 or 4 ft. The first row of timber should be stood as close as practicable to the coal face. The posts in this row should be removed and reset as the cutting machine advances along the face. It may be necessary or advisable to use projecting crossbars over the timbers for the better protection of the men and the machines.

Ques.—State how the several mine gases may be detected. In what proportion in the air are they fatal to life? In what proportion do they extinguish light?

Ans.—Methane or marsh gas (CH_4) is detected by the flame cap produced in a safety lamp burning in an atmosphere charged with that gas, the height of the cap and the action of the flame indicating the proportion of gas present in the air. The gas is not extinctive of a lamp flame, until about 6 per cent. of gas is present in the air. The gas is practically without toxic effect and is fatal to life only when the proportion of gas has reached about 66.5 per cent., the oxygen content of the air being then decreased to 7 per cent.

Carbon monoxide (CO) is detected by observing its effect on small caged animals, as birds or mice, these being far more sensitive to the effects of the gas than men, as shown by their collapse when a small percentage of gas is present. From 0.1 to 0.5 per cent. of carbon monoxide present in the mine air will prove fatal to human life, depending on the length of time the air is breathed and the oxygen content of the air. This gas being inflammable will not extinguish a light when present in the air.

Carbon dioxide (CO_2) is best detected by its effect in dimming or extinguishing a light when present in sufficient proportion in the mine air. The effect of carbon dioxide to extinguish a light or prove fatal to life depends largely on the depletion of the oxygen in the air. With a normal oxygen content, an oil-fed flame is usually extinguished when 14 per cent. of this gas is present in the air, and 18 per cent. of the gas is then fatal to life. On the other hand, a residual atmosphere in which the oxygen content is reduced to, say 17 per cent., but 3 per cent. of carbon dioxide is required

to extinguish an oil-fed flame. In like manner, as the depletion of the oxygen content in the air breathed increases, a fatal effect on life is produced with a lesser percentage of carbon dioxide, the percentage depending on the depletion of the oxygen.

Ques.—If you were the foreman of a mine generating gas and an accumulation of firedamp collected on the falls, what method would you adopt to remove it?

Ans.—Before attempting to remove the gas, notify and withdraw the men on the return of the current and in the adjoining places. Then erect a brattice so as to deflect the current of air over the falls, using only a good safety lamp and employing competent men when performing the work. It may be necessary to increase the circulation in that section of the mine.

Ques.—State fully your opinion of the principal causes of explosions in mines, and give in detail any method you would recommend for their prevention.

Ans.—The presence of gas and dust in mines, use of open lights or electricity when improperly installed, use of black powder and careless methods in blasting and the careless handling of combustible material are the chief causes of explosions in mines generating gas.

To prevent these occurrences enforce a strict compliance with the state mining laws and mine rules and regulations. Maintain a strict discipline when the laws are violated or the rules and regulations disobeyed. Maintain an ample and efficient system of ventilation and employ competent mine examiners and safety inspectors in sufficient number to perform their respective work thoroughly. Remove all dangers promptly when found.

Ques.—Will coal dust extend a mine explosion throughout the entire mine in the absence of explosive gas?

Ans.—Yes.

Ques.—Give your opinion of the best method of rendering coal dust harmless.

Ans.—The best method of accomplishing this purpose is to remove the dust from the mine workings and the haulage roads where it is accumulated and load it out of the mine. Sprinkling the dust, as it lies on the floor of the workings and in the roads and on the timbers and ribs, is a precaution taken to prevent its being blown into the air. Dust suspended in the air current is particularly dangerous. Though beneficial, this method of treatment does not eliminate the danger of explosion.

Ques.—Give your opinion of the best method of humidifying the air in a mine.

Ans.—Some practical and effectual means of preheating the mine air current should be devised, using for that purpose the exhaust steam of the hoisting, haulage and ventilating equipment. What appears to be the most effective means yet devised for this purpose is a combined heating and humidifying apparatus such as was described in *Coal Age*, Vol. 15, pp. 28, 29, in connection with the prevention of the freezing of shafts in winter.



FOREIGN MARKETS AND EXPORT NEWS

EDITED BY ALEX MOSS



Great Britain Facing Huge Coal Problem

Announcements of Price Increase Bring Protests from All—Will Hinder Development of Britain's Foreign Trade and Make American Competition

Industrial circles in Great Britain were thrown into a state of excitement when Sir Auckland Geddes, president of the Board of Trade, announced that after July 16 the price of coal to all consumers would be increased by 6s. (\$1.46) per ton. He announced that this increase had been made necessary by the seven-hour working day and the increase of 2s. (\$0.49) a day in pay which was granted the miners some months ago by the Coal Commission appointed to investigate demands of miners. Shortly after the commission had made its report it was announced that the price of coal would have to be increased by 4s. 6d. (\$1.10). However, according to Sir Auckland Geddes, in making up this price the Government had not taken into consideration three vital factors: (1) Coal used in working the pits; (2) coal issued free to miners; and (3) coal for export at a price exceeding the minimum. In a White Paper issued by the Government it is estimated that the deficiency in the working of the coal mines from July 16, 1919, to July 16, 1920, will be £46,000,000 (\$223,850,000).

This announcement of an increase in price brought forth protests from householders, industrial interests and the miners themselves. Since the award of shorter working hours and increased wages the Coal Commission has held another session, and upon the findings advocated the nationalization of mines, which has been sought by the Miners Federation for some years past. Leaving out of consideration the question of nationalization, the country as a whole views with alarm this increase, as it will raise the price of all the manufactured products of Great Britain entering into international trade. As stated in Parliament, Great Britain lives by its international trade, and anything that handicaps the foreign trade will have a detrimental influence upon the progress of the country.

Prices in Various Countries—Effect on Industrial Products

Before the Government's case was opened in Parliament, Mr. Bridgeman, Parliamentary Secretary of the Board of Trade, said that the costs of coal at the pit head, according to latest statistics, were as follows: Scotland, 28s. 11d. (\$7.04); the rest of Great Britain, 29s. 4d. (\$7.14); Transvaal, 1916, 5s. 6d. (\$1.34); Natal, 1918, 10s. 7d. (\$2.58); India, 1918, 5s. 10d. (\$1.42); United States, June, 1919, 11s. 2d. (\$2.72); France, June, 1919, 36s. (\$8.76); Belgium, 1917, 18s. (\$4.38); Spain, 1917, 39s. (9.49). He further stated that the average pit price of coal in the United Kingdom in 1913 was 10s. 1½d. (\$2.46).

Sir Auckland Geddes, referring to the effect that the increased cost of coal would have on international trade, said that it would mean that rails which were now selling at £16 (\$77.86) per ton in Great Britain would have to be sold for £17 10s. (\$85.16) after the increase, as compared with £10 (\$48.67) for the same product in the United States; ship plates in Great Britain were now selling at £17 15s. (\$86.38), but with the increased cost of coal would have to be sold for £19 (\$92.46), while the United States product could be sold for £14 (\$68.13); crown bars, which were now selling at £21 (\$102.20) would have to be increased to £22 10s. (\$109.49), as compared with £11 15s. (\$57.18) in the United States; pig iron, which was now quoted at £8 (\$38.93) in Great Britain would sell for about £9 (\$43.80), while the

same quality of iron in the United States would sell for £6 (\$29.20). The rise in the price of coal, he said, would cause an increase in steel and finished iron of 25s. to 30s. (\$6.08 to \$7.30); coke, about 10s. (\$2.43); spelter, £2 (\$9.73); gas, 6d. to 9d. (\$0.12 to \$0.18) per thousand feet; electric power, 1d. to 5d. (\$0.02 to \$0.10) per unit; paper, 10s. (\$2.43) per ton; glass, 5 to 10 per cent.; textiles, about 4 per cent.; bricks, about 5 per cent.; machinery, about 12 per cent.; and chemicals generally, about 10 per cent.

Analysis of Increased Cost of Production

In explaining the cost he said that in 1913 the average pit price of coal was 10s. 1½d. (\$2.46); today the price was 26s. 3½d. (\$6.34). Thus coal sold stood at 11s. (\$2.68) in 1913 while today the price was 29s. 3½d. (\$7.13). In 1913 the costs were made up as follows: Labor, 6s. 4d. (\$1.54); timber and stores, 1s. (\$0.24); other costs, 11d. (\$0.22); royalties, 5½d. (\$0.11); owners' profits, 1s. 5d. (\$0.35). The corresponding costs today are: Labor, 19s. 5½d. (\$4.74); timber and stores, 3s. 2½d. (\$0.78); other costs, 1s. 2½d. (\$0.29); royalties, 6½d. (\$0.135); owners' profits, 1s. 2d. (\$0.28); compensation to owners for workings which would otherwise be abandoned, 3½d. (\$0.065); another 1d. (0.02) for administrative purposes and required in connection with coal control; and also 1½d. (\$0.025), which was surplus per ton. After July 16 the following would be the figures: Labor per ton, 21s. 10½d. (\$5.32); timber and stores, 3s. 7d. (\$0.87); other costs, 1s. 4½d. (\$0.33); royalties, 7½d. (\$0.15); owners' profits, 1s. 3½d. (\$0.31). As a result of the increase of wages and the reduction of output labor cost had increased 13s. 1½d. (\$3.19) per ton raised, or 15s. (\$3.65) per ton sold, out of a total increase of 15s. 1½d. (\$3.87) per ton raised, or 18s. 3d. (\$4.44) per ton sold.

In justifying the increase Sir Auckland Geddes gave estimates as to the cost price of coal delivered in the coal bins of the householder in London. The miners declared that they were certain these figures were not correct, and asked that the Government postpone the increase to give them time to investigate. This Bonar Law, on the part of the Government, agreed to do. It was stated in Parliament that American coal, f.o.b. Atlantic ports; was about 20s. (\$4.87) a ton and that America was much nearer some of the places to which Great Britain formerly exported coal than were the coal ports of the British Isles.

Coal Regulations in Australia

Further regulations relating to the Australian Government's control of the coal industry were issued recently. Formerly the Prime Minister was empowered to fix rates of wages and conditions of employees working at coal mines whose output had been acquired by the Commonwealth under the regulations. The Prime Minister may now fix rates of wages and conditions of employees at any other coal mine in the Commonwealth, whether or not an acquisition order has been issued. Where this has been done he may vary contracts for the supply of coal from such mine, the *Melbourne Age* announces.

In accordance with this new regulation, an order has been issued fixing the rates of wages of persons employed in the production of coal at all coal mines in the State of Victoria (save Hudson's Austral

Exports of Coal and Coke During June, 1919

(Compiled by Bureau of Foreign and Domestic Commerce)

Countries	Coal		Coke, Tons
	Anthracite, Tons	Bituminous, Tons	
Denmark.....		37,856	
France.....		19,196	2,406
Greece.....		4,997	
Italy.....		126,881	
Netherlands.....		43,479	
Norway.....		27,052	
Sweden.....		55,270	
Switzerland.....		101,601	
Bermuda.....	130	1,522	
British Honduras.....	1	216	1
Canada.....	471,825	1,430,741	28,642
Guatemala.....		100	
Honduras.....		749	3
Nicaragua.....		356	
Mexico.....	341	14,312	17,356
Miquelon, Langley, etc.....	293		
Newfoundland and Lab.....	1,407	998	
Barbados.....		9,060	
Jamaica.....	5	605	
Trinidad and Tobago.....		5,892	
Other Brit. West Indies.....		5,583	
Cuba.....		84,198	25
Danish West Indies.....			2
Dutch West Indies.....		1,097	
French West Indies.....		7,430	15
Dominican Republic.....	3	464	15
Argentina.....	25	54,796	248
Brazil.....	50	100,778	54
Chile.....		8,397	
Colombia.....	6	903	
Falkland Islands.....		6,423	
British Guiana.....	25		
Peru.....		5,243	7,758
Uruguay.....		22,758	
Venezuela.....		240	8
Philippine Islands.....	204		
Total.....	474,315	2,179,201	56,533

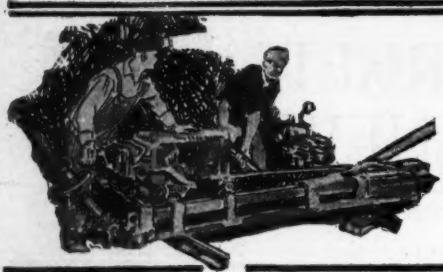
Districts:

Maine and New Hampshire.....	146		21
Vermont.....	2,443	4,532	194
Massachusetts.....	470		
St. Lawrence.....	174,224	143,357	3,954
Rochester.....	74,562	81,946	
Buffalo.....	205,679	207,932	15,225
New York.....	10,482	25	2,614
Philadelphia.....	5,331	73,185	
Maryland.....		214,656	7,733
Virginia.....		427,102	173
South Carolina.....		10,057	
Georgia.....		3,300	
Florida.....		4,402	
Mobile.....		89	
New Orleans.....	1	1,784	4
Sabine.....			6
San Antonio.....	238	931	2,362
El Paso.....	41	7,365	5,363
Arizona.....		5,519	9,617
Southern California.....	62	63	
San Francisco.....		2	8
Washington.....		124	168
Dakota.....	206	2,295	140
Duluth and Superior.....	229	1,877	127
Michigan.....	45	88,969	7,628
Ohio.....	156	899,709	1,185
Porto Rico.....			11
Total.....	474,315	2,179,201	56,533

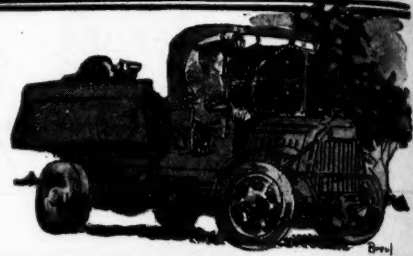
BUNKER COAL

Districts:	Tons
Maryland.....	44,176
New York.....	294,354
Philadelphia.....	34,750
Virginia.....	141,944

Colliery, Korumburra, and mines producing brown coal) as follows: The rates are to be those prevailing on May 29, plus 15 per cent., provided the minimum rate for adult workers, other than stablemen, shall be \$3.10 per day, and the minimum rate for stablemen shall be \$2.98 per day



COAL AND COKE NEWS



Harrisburg, Penn.

Increase of cost of compensation insurance not as large as predicted by opponents of bill. Accident and fatality statistics noted. Conference planned to discuss advisability of maintaining state insurance fund ten per cent. differential. Attitude of stock and mutual insurance companies.

While compensation insurance costs were increased by the last legislature, the figures compiled by the actuaries do not indicate that the increases are nearly so large as the opponents of the bill alleged they would be when the bill was pending in the House and Senate. According to E. H. Downey, state insurance rate expert, the average increase in the cost of all benefits under the new compensation bill will be 30 per cent. The increase in death benefits will be only ten per cent. Permanent disability charges will jump approximately 40 per cent. Medical costs have been increased 50 per cent., while temporary disability costs will average an increase of 40 per cent. It is estimated that the increased costs to the mining industry will be 20 per cent.; in the manufacturing industry, 30 per cent.; in construction work, 25 per cent.

The accident and fatality experience of 1918, while it will necessarily figure in rates for the coming year, is not an experience that is likely to be permanent. In the mining industry the years 1917 and 1918 show an increase in the number of fatal accidents as compared with 1916. This was due to the fact that mines were operated under pressure, and that in many instances it was impossible to keep mines in good physical condition. Timbering deteriorated and could not be readily replaced in many instances. Moreover, there was an increase in the number of unskilled men around the mines.

From 1911 the production of coal per fatal accident was always under 300,000 tons. In 1911 the present bituminous mine law was enacted with the result that in 1913 there were 350,000 tons of coal mined for every man killed. In 1916 a new high figure was set; that year 425,000 tons of coal were mined for every fatal accident. Then came the slump, the 1917 and 1918 figures being 360,000 tons of coal for every fatal accident.

It is expected that with the return of normal conditions in the mining industry that the accident and fatality totals will fall. This fall will not immediately be reflected in a drop in compensation costs by reason of the fact that there is now an unusually large percentage of married men among the workers in the mines. Many single miners have gone back to Europe, and many single miners who entered the service have not returned. The possibility of reducing accident and fatality totals, however, is shown by the fact that if present costs were compared with the 1903 death and accident list, then the compensation charge would actually show a decrease.

Commissioner Donaldson is preparing for a conference with all interests and will hear arguments on the question whether the state insurance fund ten per cent. differential should be maintained. At present the state fund is permitted to write compensation insurance ten per cent. cheaper than the mutual or stock companies. The fund now has a premium income of \$2,500,000 a year. The surplus is approximately \$2,000,000. Two years ago, the associated companies had three times the amount of coal mine insurance as that written by the insurance fund. Now, however, the fund has as much of that sort of business as the associated companies.

The stock companies contend that it will not make any difference, in the long run, whether the ten per cent. differential is maintained or not. They say that if the state fund is not permitted to write insurance at lower rates than the stock

companies and the mutuals, then the state fund will be able to increase its dividends. It is evident, however, that the companies are of the opinion that the ten per cent. differential gives the state fund an advantage that is more psychological than financial. A lower rate sounds better than a larger dividend. It is generally taken for granted that the companies are not interested in boosting the state fund and would not be advocating the abolition of the differential if by so doing, they would increase state fund business.

The prime contention of the companies is that at present the state fund bids fair to become the dominant factor in the compensation insurance situation, whereas the intention was simply to make it a regulator act, with which to keep the stock companies and mutuals on their good behavior. Insurance Commissioner Donaldson has expressed himself as favoring the abolition of the state fund differential. He also has been quoted as expressing the belief that the compensation business should all be in the hands of the mutual companies, there being no proper place for it in either the stock companies or the state funds. Commissioner Donaldson has the final word as to whether the ten per cent. differential stands or falls.

Charleston, W. Va.

Little coal mined on C. & O. during second week of August. Loss close to 1,000,000 tons. Next to impossible to secure New River smokeless. Cannot recover lost ground during August. Should have been banner month of the year.

Virtually no coal at all was mined in the high volatile fields of West Virginia during the week ended Aug. 16 except such as may have been produced at a few scattered mines on the Chesapeake & Ohio Ry.; for although the strike of C. & O. shopmen had been settled by the end of the week yet the railroad, even by Saturday, Aug. 16, was in no position to handle coal trains to any extent and consequently empties were few and far between. The backbone of the strike on the C. & O. was broken when the men at Richmond returned to work followed by the men at Clifton Forge, Hinton and other points on Aug. 13. Few mines were able to operate to any extent until Aug. 13 on the C. & O., and it was estimated that there was a total loss of production of between 750,000 and 1,000,000 tons of coal; the operations on the line of the Kanawha & Michigan Ry., on the north side of the Kanawha River, alone receiving any cars.

As might be expected, with so large a supply of coal shut off, there was a most urgent demand felt in southern West Virginia for smokeless steam fuel and prepared sizes, neither of which it was possible to meet; it appears to be next to impossible to secure any smokeless coal.

Between Aug. 7 and 15 the loss in production for both the New River and Windy Gulf districts was in excess of 200,000 tons. Producers are of the opinion, that, as a result of run-down equipment and general demoralization caused by the strike, it will not be possible to recover any lost ground during August. Under favorable transportation conditions August should have been the banner month of the year especially in view of the insistent and extensive demand for New River coal. This demand cannot be met especially as production has fallen so far behind the requirements of both foreign and domestic trade.

Except among the mines reached by the Kanawha & Michigan Ry. and the Kanawha & West Virginia Ry., no coal was mined in the Kanawha district during the week ended Aug. 16, the striking shopmen not returning to work until Aug. 15. Consequently few mines received any cars before Aug. 18 and then there was an extremely short supply. In fact it will take 30 days to recover from the effect of the shopmen's strike, in the opinion of pro-

ducers. It was estimated that there was a loss in production as a result of the strike, in the Kanawha region of between 300,000 and 400,000 tons, and the financial loss to operators, miners and business in general was extremely heavy. As no shipments could be made, it was out of the question to take care of the strong call for splint, lump and other prepared coal as well as for mine-run.

Tonnage from the Kanawha district handled by roads other than the Chesapeake & Ohio during the month of July was as follows: Kanawha & Michigan: 272,928; Kanawha & West Virginia: 15,220; Campbell's Creek R.R.: 45,134.

Fairmont, W. Va.

Director General Hines' statement about transportation subject of lively comment on part of operators. Northern West Virginia fields have been hard hit. Railroad tonnage declining. Movement to Lakes small. Embargo lifted on tidewater shipments.

In view of the car shortage which has been so pronounced in the Fairmont and other northern West Virginia fields for the last month, the comment on Director General Hines' statement (in reply to a Senate resolution), in which he said that the car shortage in the bituminous fields has been insignificant and should not warrant any increase in prices, has been a subject of rather lively comment on the part of northern West Virginia operators. Inasmuch as the Fairmont and other regions have been suffering from a car shortage which has been materially retarding the production and transportation of coal, and inasmuch as the railroad figures have shown a shortage of cars and railroad officials have admitted such a shortage, producers are wondering from what sources the director general secures his information and just how much reliance is to be placed on it. The various regions in northern West Virginia were still handicapped by an inadequate supply of cars during the week ended Aug. 16, though the supply did show an improvement over the previous week. It requires about 1250 cars a day to supply the mines in the Fairmont region, and during the first two weeks of August there have been only two days during which the supply of cars was equal to the rating and those days were Monday 4 and Monday 11, following a Sunday accumulation. As an inevitable result of the car shortage there was an average of 20 mines a day shut down in the Fairmont region alone. Because of a somewhat better supply of cars, however, shipments were in excess of the first 9 days of August, and the tidewater tonnage was heavier in volume throughout almost the entire week than it had been during the previous week. Railroad fuel shipments, however, during the same period seem to have declined somewhat and tonnage moved to the Lakes was rather small in volume. Most of the tonnage for Curtis Bay is being exported and since the embargo (in effect early in the week) was lifted there had been a much larger tonnage shipped than was possible under such restrictions.

Huntington, W. Va.

Conditions in Logan field on account of railroad shopmen strike. Loss of 347,000 tons as direct result of strike. Guyan operators appeal for better car supply.

Though empties began to flow into the Logan district by Aug. 18, after a suspension of all coal traffic, it was not found possible to make any headway in getting production back to normal during the week. Consequently the car supply was far short of requirements throughout the week and production was still at quite low ebb though not so low as during the week ended Aug. 16 when only 79,000 tons were produced, none of that however being shipped except at the end of the week. The total loss

for the week just referred to (as a direct result of the strike) was 328,000 tons or 77 per cent. of the capacity of the mines; that constituted the bulk of the entire production loss of 347,000 tons, "no market" losses only running 11,000 tons or three per cent. of capacity. By operating for a day or so at the wind-up of the week the mines of the district were able to produce up to only 18 per cent. During the same period last year production was at the rate of 212,000 tons.

The car shortage has been so serious in West Virginia since early in July that a committee of Guyan operators went to Pittsburgh on Aug. 20 to appeal to Mr. Gerner, manager of the Eastern Car Pool, for a better supply of cars for West Virginia mines and especially for mines of the Logan field. On the committee were: A. R. Beisel, of the Logan Mining Co.; J. J. Ross, of the Logan Mining Co.; and Walter Thurmond, another well known coal man of the Logan field. While the car supply was rated as fair at the time they left for Pittsburgh they saw little prospects for the future unless further plans for guaranteeing a good supply were worked out.

Hinton, W. Va.

Report of C. & O. Ry. notes equipment allotted to it by Railroad Administration. C. & O. protests its acceptance. Objections overruled by administration. Railway finally accepts and asks assistance to finance cost. Indifferent way in which administration maintained the railroad.

The following extract from the report of the Chesapeake & Ohio Ry. for 1918 shows why the freight cars built for its use were not originally accepted and how indifferently the Railroad Administration is maintaining at least one of the coal carrying roads: During the year 1918 the U. S. Railroad Administration notified the C. & O. company that there had been allotted to it 25 freight and passenger locomotives, 1000 box cars and 2000 55-ton steel coal cars, at an estimated cost of \$10,559,500 which the C. & O. company was expected to provide. The directors of the C. & O. were of the opinion that the equipment so allocated was not necessary to the efficient operation of the railroad, that much of it was unsuited for the company's purposes, and that the purchase of such equipment at the current prices, which were abnormally high, was inadvisable.

Protests were accordingly made against the company being required to accept such equipment. Notwithstanding such protests, the administration adhered to its position and notified the C. & O. that unless it agreed to accept the allocated equipment, the entire cost of such equipment would be charged against the compensation due it under the Federal Control Act. Although the C. & O. directors believed the position of the administration to be unreasonable, in order to protect the interests of the company and to prevent the charging of so large an amount of capital expenditures against its income, they determined to accept the equipment so allocated, with the proviso that the director general should assist the company in financing its cost which it is believed he is prepared to do.

Statistics in the report show that in the maintenance of way and structures during 1918, the Railroad Administration replaced only 824,153 cross ties, as compared with 1,035,029, put in by the road in the preceding year. Only 19,396 new ties were used in the construction of new tracks and sidings, as compared with 29,818 in 1917. There were 10,645 tons of new rail used in renewals in 1918, as against 25,119 tons in the preceding year.

Bluefield, W. Va.

Result of railroad shopmen's strike in Pocahontas field. Production loss for week ended Aug. 16 was 186,000 tons. Loading done by two prominent plants on Virginian Ry.

The full extent to which production in the Pocahontas region suffered during the week ended Aug. 16, through a shopmen's strike on other roads, is shown by the fact that 26,000 tons more were lopped off production and that a car shortage cut into production to the extent of 177,000 tons—an increase of 37,000 tons over the previous week. More than 300 hours were cut off of the working time in the mines of the district, largely because of the increase in the shortage of cars, and at the same time the labor situation was not quite so favorable, there being an increased loss from that source. The total production loss for the week was 186,000 tons—an increase of 38,000 tons. Owing to poor transportation

conditions, therefore, conditions were quite similar to those prevailing last winter when there was a poor market. The lessened supply of smokeless has made itself felt most keenly in all markets especially in view of the growing export demand. Coke production remained at the same figure as for the week ended Aug. 9.

A total of 9,994 cars (449,700 tons) were loaded on the Virginian Ry. during the month of July. The heaviest loading for the month was at the Stotesbury operation of the E. E. White Coal Co. where 416 cars were loaded; good work was also done at the Winding Gulf Colliery Co. where 347 fifty-ton cars were loaded.

Louisville, Ky.

Representative Boyd, of coal operators' associations of the South and adjacent territory, working hard on car shortage problem. Little encouragement. Hord of Kentucky association makes statement.

C. D. Boyd, Traffic Manager, representing the Southern Appalachian Coal Operators' Association, the Harlan and Hazard associations, and others, has been working hard for the past month on the car shortage problem. He plainly states that he has secured little encouragement, and practically no improvement of the situation. Mr. Boyd has been in Washington several times, was in Atlanta to see B. J. Winchell, the regional director of the U. S. Railroad Administration, and has been working steadily to secure relief. At the present time the pool mines are getting cars while the others suffer. Cars routed south to the oil and cotton districts are returned over short routes, such as the Seaboard and Norfolk & Western to car pool territory; operators in that section are securing quite a fair run of cars, while Kentucky and east Tennessee mines are working two days a week.

R. A. Hord, of the Hazard Coal Operators' Association, made a statement at Lexington recently in which he stated that eastern Kentucky will shortly face a serious labor shortage as well as car shortage. If cars are not supplied, labor will move to other fields. This statement was also emphasized by H. A. Beard, Kentucky representative of the C. L. Ryley Coal Co.

Birmingham, Ala.

Fight of Alabama coal operators and Governor Kilby over revenue bills on in full force. Kilby makes statements which are challenged by coal men in open letter to governor. Cost of coal production discussed. Deadlock continues in Senate over general revenue bill.

In the July 14, 1919, issue of *Coal Age* was a report on the status of the Alabama general revenue bill which, at that writing, was being considered by the Alabama House of Representatives convening in committee of the whole. Since then this bill has been put through the House, but only at the expense of certain changes. This bill is of considerable direct importance to the operators of that state on account of the coal and iron tonnage tax and the income and excess profits section. These features all remained in, but the coal tax at only two-fifths of the rate fixed by the budget committee, and the excess profit tax was cut in two.

After leaving the House, the bill was referred to the Senate committee on finance and taxation. The strongest fight then made against the bill was that of the business people, who suddenly awoke to the significance of the income and excess profits sections. There was also a growing sentiment against the coal and iron tonnage tax. These were the main points of attack. However, it looked as though these two sections would be retained in the bill, though at a slight change in the rate. Governor Kilby was unyielding in his demands that this tax be retained in the bill.

The Governor gave out a prepared statement in which he claimed that opposition to the mineral taxes is based on selfishness and money greed. He cited a certain Alabama coal operator who told him that coal was being mined at a profit of \$1 to \$1.50 a ton in the state. Before the war—said the governor—the price of coal ranged from \$1 to \$3 or \$4 at the mines; today these prices are doubled and the cost of digging coal has only increased about 30c. a ton. It was also stated that the reason why Kentucky and Tennessee competition could not be met was because the operators did not want to break down the war prices. Congressman George Huddleston was also quoted in an effort to strengthen the case of the Alabama administration and damage the testimony of the operators. However, the public utterances of Mr. Huddleston are too well known on coal matters in general, to make it necessary to quote him in particular.

The statement of Governor Kilby was answered by an open card from the operators, who challenged the administration to either prove or retract the assertion that coal operators in Alabama are making a profit of \$1 to \$1.50 a ton. The challenge was signed by a number of the largest operators in the state. The coal men of the Birmingham district, in an open hearing before the finance and taxation committee of the state Senate, attacked the pending revenue bill, declaring it to be unfair, unjust and virtually a penalizing of industry. H. T. De Bardeleben stated that a member of the House charged that his statement as to the cost of mining coal was padded and could not be accepted. "This statement is true," said Mr. De Bardeleben. "It is sworn to, and if false I am subject to a fine of \$15,000 and three years in the penitentiary. My books are open for your inspection."

The operators further stated that the total cost of mining coal has greatly increased since 1914; coal which cost \$1.10 per ton at that time, now costs up to \$2.50, and that which then cost \$1.35 now costs up to \$3.60.

Other prominent operators and men of the state contributed similar testimony, which was met by another statement from the governor, who made a technical denial of some of the charges the operators had brought up against him and certain features of the revenue bill. The latest available information in the matter notes that efforts to get the general revenue bill out of the finance and taxation committee have failed; it is apparently hopelessly tied up over the taxing machinery, the income, excess profit and coal and iron tonnage sections.

Terre Haute, Ind.

Increase of 300,000 tons during July over June tonnage in Indiana. Mines work half time in July. Railroad shopmen's strike cut down tonnage for first half of August.

Production of coal by Indiana mines showed an increase of almost 300,000 tons in July over the June production, according to reports, which were announced at the headquarters of the Indiana Bituminous Coal Operators' Association. In July there were hoisted in the Indiana field 1,615,495 tons, as against 1,355,551 tons in June. These figures indicate that the 197 mines, on whose reports the total tonnage is based, worked approximately half time last month. With full time production they could have produced close to 3,500,000 tons. Whether August will show a material gain over July cannot yet be forecast. The week ended Aug. 2 showed a production of 377,394 tons, which was slightly under the preceding week, while the following week showed a further decrease on account of the railroad shopmen's strike, many mines having closed down because of the inability of the railroads to serve them. Of the orders being received, the greater part are for railroad and domestic fuel. Users of steam coal are still hanging back and apparently are placing orders only for coal as they need it from day to day. The most uncertain element at the present time is rail facilities and car supply. A tremendous demand, it is believed, is bound to develop in a short time. Meantime, the operators are bending every energy to induce domestic users to lay in their fuel supply at once.

St. Louis, Mo.

Railroad Administration orders Western coal cars to be sent east. Strong protest by coal men. Emphatic message of Missouri association to the Railroad Administration against order.

Strong protests are being sent to N. C. Kendall, Director of the Car Service Section of the United States Railroad Administration, at Washington, against the order recently issued by the Railroad Administration to Illinois coal-carrying lines to turn over a large number of their own coal cars at designated junction points to be taken east for the use of the Eastern lines. El. J. Wallace, Acting Secretary of the Missouri Retail Coal Merchants' Association has sent the following telegram: "Please be good enough to advise us why the people in the eastern part of the country are to get the coal equipment that the Middle West must have right now or freeze this winter. Are you not serving the country as a whole? We emphatically protest against this order which calls for Western equipment to be shipped east. We are citizens the same as the people of New England and it is not our intention to be discriminated against in the matter of coal equipment. We have patriotically responded to every call and if the railroads have

been mismanaged, surely we should not be penalized. We must insist that we be given our share of the empty coal car equipment for the mines to load in the Middle West. Methods of unfair distribution are what is causing civil unrest in this country. The coal dealer and the mine operator are not to blame when the public shows its resentment over being punished for other people's mismanagement."

Trinidad, Colo.

Earnings of miners of Colorado Fuel and Iron Co. for June noted. Marked increase in wages under per ton payment plan. Data about Colorado's principal coal fields. Details of earnings at typical plants given.

Coal miners working for the Colorado Fuel and Iron Co., more than 20 days in June, averaged \$158.52 each for the month, or an average of \$6.72 a day for each man, according to an announcement made by the Colorado company recently. The miners are paid by the ton. The statement is interesting inasmuch as it shows the earning capacity of coal miners in Colorado. There has been a marked increase in the earnings of miners under the per ton payment plan. In Colorado, June is known to be a high month as regards coal mined, for during that month few mines work full time, hence the earning capacity of the men is reduced. In the mines of the Colorado Fuel and Iron Co., 1192 miners worked more than 20 days each; furthermore the statement shows that 49 miners made more than \$250 each for the month of June.

The Colorado company's statement gives statistics regarding wages of miners at its typical plants. Of the seven mines noted, four (Cameron, Walsen, Rouse and Pictou) are in Huerfano County; two (Morley and Sopris) are in Las Animas County and the Coal Creek plant is in Fremont County. The total yearly production of the state is approximately ten million tons and one-half of this tonnage comes from Huerfano and Las Animas counties. Of the one million tons of coke made annually in Colorado, about all comes from Las Animas County. Six of the seven mines noted are in the Trinidad field in the southern central part of the state; the other mine, the Coal Creek, is in the Canon City field midway between the Trinidad field and the Denver region. The former field contains mostly high-grade and the Canon City field low-grade bituminous coal.

With this general information in mind and some details to be given subsequently, coal men can the more readily appreciate the value of the data relative to the earnings at the mines in question. Details relative to the earnings of the miners at one mine in each county considered will suffice by way of illustration. In Huerfano County, at the Walsen plant, out of 144 miners working more than 20 days, two earned over \$250; ten, between \$175 and \$200; 11, between \$150 and \$175. In Las Animas County, at the Sopris plant, out of 161 miners working more than 20 days, six earned over \$250; 11, between \$225 and \$250; 13, between \$200 and \$225; 18, between \$175 and \$200; 31, between \$150 and \$175. In Fremont County, at the Coal Creek plant, out of 109 miners working more than 20 days, two earned over \$250; four, between \$225 and \$250; five, between \$200 and \$225; 11, between \$175 and \$200; 30, between \$150 and \$175.

The coal mined at the Walsen plant averages five feet in thickness and is developed by a slope. The Sopris plant is a drift mine and the coal averages five feet in thickness. The coal at the Coal Creek mine is reached by a shaft and it is four feet thick.

In this connection an interesting article appeared in the May 22, 1919, issue of *Coal Age* under the title, "Some Items That Enter Into the Cost of Producing Coal." The figures in this article are those pertaining to the Victor-American Fuel Co.'s production costs; this company being one of the leading coal producers of Colorado.

Vancouver, B. C.

Problems of the Northwest—Fuel shortage and rapidly advancing prices. American naval squadron at Bremerton, Wash., takes on considerable coal. Coal now at \$10.75 a ton.

Two problems are receiving attention at the hands of consumers of coal in the Northwest at the present time. One of these is the likelihood of there being a shortage next winter and the other the

rapidly advancing prices. Coal merchants of Victoria and Vancouver, British Columbia, state that they do not expect a condition that will prevent their meeting all demands both from domestic and commercial sources. However, the arrival of the American naval squadron at Bremerton, Washington, taxed the production of coal in the Northwest to the utmost. In the meantime an advertising campaign is in progress having in view the inducement of the public to purchase their winter supply of fuel as far as possible without delay.

As to prices, there is a considerable section asking for an investigation. Coal now is bringing about \$10.75 a ton as compared to \$7.50 when the war broke out. Many cannot see the justification for this substantial increase and would like the matter thoroughly probed by a properly constituted government board.

Ottawa, Ont.

Smokey River coal leases cancelled. Canadian Geological Survey states this coal is richest in Canada. Recommended that Government develop the area of 18,000 acres.

As a result of the investigations held by the select committee of the Senate of Canada, appointed recently to inquire into the question of certain valuable coal leases in the Smokey River district of the Alberta Peace River, (about two hundred miles north of Edmonton) the leases have been cancelled by order of Hon. Arthur Meighen, Minister of the Interior. As a consequence the application for the right to build a railway, to be known as the Athabasca Grand Prairie & Vermillion Ry., will go no farther in its present stage. In the investigations that took place, officials of the Geological Survey, Ottawa, testified that the coal area in question probably is the richest in Canada; if developed and connected with the main line to the south, it would be able to supply the whole of the West with a coal, said to be almost equal in quality to the Pennsylvania anthracite. That this may come about, it is recommended that the Government develop the area either on a national or royalty basis and that a line of railways sixty miles in length be constructed at once from the Grand Trunk Pacific or Canadian National Railways' main line to the area in question. The leases comprise some eighteen thousand acres, and the coal available is estimated at from 200,000,000 to 400,000,000 tons. A German-American, Dr. Botts, first filed on the leases in 1912, and paid into the treasury the sum of \$100,000 in six years for his leases. In 1918 he failed to make payment and the rights were cancelled.

PENNSYLVANIA

Anthracite

Llewellyn—The old Silverton colliery near this place has been reopened by out-of-the-state parties and is in position to ship coal. George Moore, of Minersville, is in charge of the plant.

Mahanoy City—It is announced that the Philadelphia & Reading Coal and Iron Co. will develop a mammoth stripping near this place; the company has started to uncover coal on its property between Mahanoy City and Lost Creek.

Hazleton—The Anthracite Forest Fire Protective Association has been formed. Dr. Drinker, President of Lehigh University, is the president and Chief Forester Neumiller, of the Lehigh Coal and Navigation Co., of Lansford, is secretary. An extensive area is included in the territory looked after by this protective association which is now conducting an advertising campaign in the anthracite region of Pennsylvania to get every landowner within the area on the membership roll. The association, which numbers coal companies, water companies, rod and gun clubs and individual citizens among its membership, hopes ultimately to reduce forest fires throughout the entire region to a minimum and to encourage the re-forestation of what are now waste lands.

The inside team of Beaver Brook and the outside team of Locust Mountain collieries won the trip to Pittsburgh and the right to compete in the first-aid and mine-rescue event to be held by the Bureau of Mines on Oct. 1. These teams participated in the Weston Dodson Company, Inc., meet at Hazle Park on Aug. 15.

Shenandoah—The rush of anthracite miners to their former homes in Europe has been halted by the high prices prevailing overseas. It developed at a meeting held by foreigners of this section recently. So high are the prices in Galicia, Italy and

Russia that miners who planned to return home, each with several thousand dollars, found that this sum would be inadequate to establish themselves in business at present rates.

It was stated at the meeting that sugar is selling at \$2 a pound in Galicia and shoes at \$30 for an ordinary pair. "Those who have been preparing to leave America partly on account of the high cost of living here, found they would only be jumping out of the frying pan into the fire," said one of the prominent Polanders, who attended the meeting.

Bituminous

Uniontown—Connellsville interests headed by Joseph J. Butler and George S. Connell, have purchased the Beechwood mines of the Consolidated Coal Co. at Beechwood, Monongalia County, W. Va. The company also owns other valuable holdings in the same district.

The Cumberland Coal Co. has added to its holdings in Greene County by the purchase of a three-fourths interest in 247.29 acres from Levi Keener, of Morgantown; F. H. Keener, of Carmichaels and T. F. Keener, of Willow Tree. The consideration was \$115,919.15.

WEST VIRGINIA

Glen White—The total production of the mines of the E. E. White Coal Co., at Glen White and Stotesbury, in the Raleigh County field during the fiscal year ended June 30, 1919, was 676,000 tons; the production of the two mines was almost even, 340,000 tons being shipped from the Glen White plant and 336,000 tons from the Stotesbury operation.

Charleston—Announcement has been made by W. J. Heatherman, Chief of the West Virginia Department of Mines, that the following are the places where the new mine-rescue stations in West Virginia (just established) will be located: At Wheeling—quarters and truck provided by the coal operators' association; Welch—in a building furnished by the Houston Coal & Coke Co.; Elkins—quarters provided by the West Virginia Coal and Coke Co.; Macdonald—quarters furnished by the New River Co.; Logan—quarters to be furnished by the operators' association; Fairmont—where the Consolidation Coal Co. is lending its equipment for the use of the Mine Department.

Fairmont—That the transportation committee of the Northern West Virginia Coal Operators' Association intend, if it is within the realm of possibility, to secure relief from the present car shortage was demonstrated recently when the following telegram was sent not only to the Director General of Railroads but to senators Sutherland and Elkins, and Congressman Neely: "Transportation committee of undersigned association believes there is too much advantage taken of rules which result in inefficiency in reference to utilization of equipment and in loss to the coal companies. Observation also leads the committee to think there is too much indifference to get full utilization of equipment. Delay to equipment should be reported to proper officers with view of getting it released promptly. Committee believes twenty-five per cent of car-shortage is caused by too many officers trying to rid themselves of responsibility and to lack of co-operation. This committee is ready to co-operate in any way to help this condition. For example it is absolutely foolish to place cars on rating basis when car distributor knows the mine cannot load the rating while other mines are standing idle on account of low rating. Good judgement should be used which will bring more satisfactory results."

A rumor was in circulation here last week that the law creating the Fuel Administration was to be re-enacted and the powers of the administration widened; coupled with such a rumor was one to the effect that C. W. Calloway, Director of Distribution under the Fuel Administration, would be asked to act in the same capacity again. Little credence was given the rumors afloat. Friends of Mr. Calloway (president of the Davis Coal and Coke Co.) stating that under no circumstances would Mr. Calloway agree to act in the same capacity again.

KENTUCKY

Louisville—Due to the advancing price of mine-run coal, which is now quoted at prices ranging from \$2.40 to \$2.85 a ton, some of the wagon mines with short hauls are again starting operations; but cars are so scarce that competition from such mines does not promise to become heavy for the present, it is said.

Louisville—A delegation of coal men is now in Washington in an effort to secure relief from inevitable distribution of coal cars, which has resulted in mining companies in some districts getting good supplies, through the car pool, and other sections being left high and dry. The Harlan, Hazard, Southern Appalachian, West Kentucky, Virginia and Alabama associations are represented by the delegation. This work was started on Aug. 1, at a meeting in Louisville, but to date no relief has been secured.

OHIO

Columbus—While the tabulation of tonnage figures regarding available freight for shipment over the proposed barge canal connecting the Ohio River with Lake Erie is not completed, partial figures show that 33,750,000 tons will originate in a portion of the district to be served by the proposed canal. These figures are being tabulated under the auspices of the Central River Route of the Great Lakes and Ohio River Waterways Association. A large proportion of this tonnage is coal, originating in West Virginia, Kentucky and southern Ohio. Iron ore will also contribute a considerable proportion of the tonnage.

INDIANA

Indianapolis—The Indianapolis Public Welfare Loan Association, of which J. K. Stephens is manager, is assisting many persons who are finding it necessary to borrow money with which to buy next winter's coal. Recently the rate of interest charged by the association was lowered from 3 per cent to 2½ per cent, which is 1 per cent less than the legal rate. During the seven years the association has been in existence not more than 25 or 30 foreclosures have been made. The amounts loaned range from \$50 to \$100, for which chattel mortgages on furniture are usually taken as security. In event of illness or other unavoidable reason for not paying back a loan when due, the association takes every means to aid the borrower. Although lending money at a low rate of interest and only to the most deserving persons, the association has always paid a fair dividend on its \$50,000 capital stock.

ALABAMA

Birmingham—The Tennessee Coal, Iron and Railroad Co. is said to have established a ten-hour day, with pay for eleven hours, for employees of the company working at ore and coal mines at Mulga, Muscoda and Ishkooda. More than 3,000 men are affected by this raise. The men had been working on an eight-hour basis until this increase in wages was granted. It is also said that the night shift will be restored shortly at all mines of the company in the Birmingham district.

MISSOURI

Jefferson City—Petitions purporting to be signed by 30,402 persons in 12 of the Congressional districts of Missouri, for a referendum on the workmen's compensation law, have been filed with the secretary of state by the Building Trades councils of St. Louis and Kansas City. This is 11,000 more than the required number of signers. Representatives of the Missouri State Federation of Labor and the Associated Industries of Missouri have filed a protest with the secretary of state against submission of the law to a vote of the people at the election in Nov., 1920. They allege fraud in obtaining many of the signatures. About 200 requests have been received from persons for withdrawal of their names on the ground that they were induced to sign by misrepresentation. It is also charged that the petitions contain many fictitious, duplicated and fraudulent names.

COLORADO

Walsenburg—An explosion occurred in the Oakview mine of the Oakdale Coal Co. on Aug. 18 which killed 18 men. At first it was thought that 40 miners had been entombed but all but the 18 victims escaped. The bodies of those killed by the explosion have been recovered. The accident, said to have been caused by gas, occurred about 1½ miles inside the workings. The mine is a drift opening located near Le Veta, in Huerfano County, near the southern part of the state. The Oakdale seam mined here runs from 6 to 14 ft. thick. Compressed air and electric machines and hand mining are employed in getting out the coal. Some 225 men are employed at

the plant. The general offices of the company are at Denver.

MONTANA

Roundup—Some 446,243 tons of coal were hoisted out of the No. 3 mine of The Roundup Coal Mining Co., of this place, during the year ended March 1, 1919, according to figures furnished by H. S. Hopka, superintendent of the company. Much improvement and development work was done at the Carpenter Creek or No. 5 mine of this company last year. Electrical mining machines are used to undercut the coal and electric motors are used for haulage. Some 500 men are employed at the two plants; 300 at Roundup and 200 at Carpenter Creek. The general offices of the company are at Omaha, Neb.; the mines are in Musselshell County, near the center of the state. The coal is mined by slope at No. 3 and by a shaft at No. 5; it is a subbituminous seam about 72 in. thick.

Personals

Fred W. Price, of DuQuoin, Ill., has accepted the superintendency of a mine near Colorado Springs, Colo., owned and operated by the W. D. Corley Coal Co.

C. E. Warner has been appointed traffic manager of the Southwestern Interstate Coal Operators' Association, with offices in the Keith & Perry Bldg., Kansas City, Mo. F. W. Lukins is president of this association.

Henry Miard, of Fernie, B. C., and **James Dixon**, of Nanaimo, B. C., have been appointed acting inspectors. Mr. Dixon was formerly manager of the Reserve mine and was also recently appointed to the British Columbia Board of Examiners.

O. B. Wescott is in charge of the new branch office of the Jeffrey Manufacturing Co., of Columbus, Ohio, at Detroit, Mich. Mr. Wescott has had a long experience in the sales and engineering-construction departments of this company.

S. G. Little has been appointed manager of the Mine Car Department of the Hyatt Roller Bearing Co., in the Pittsburgh district with offices in the Frick Annex, Pittsburgh; he is assisted by **Joseph S. Larkin**, sales engineer.

W. N. Rigg, of Latrobe, Penn., has accepted the position of superintendent of the large new operation of the New England Fuel and Transportation Co. at Grant Town, in the Fairmont region. He succeeds C. F. Bashore who resigned to enter the service of the Osage Coal Co., a Brady operation. Mr. Rigg has also been connected with the Latrobe & Connellsville Coal Co. He was at one time connected with the Liverpool Coal Company.

W. S. Walker, formerly southwestern sales agent for the Northern Coal Co., of Chicago, is now associated with the Peabody interests as special representative. The Peabody Coal Co. also announces that the two mines in the Gallatin County field, formerly handled by the Northern Coal Co., will be operated by the Peabody Coal Co., who will have the exclusive sale of this coal in the St. Louis market.

Charles W. McKay has taken charge of the Appraisal Division of L. V. Estes, Inc., industrial engineers. This company specializes in the appraisal of industrial properties for Federal income tax purposes and in the appraisal of public utility properties in connection with rate cases. Mr. McKay is the author of the book entitled "Valuing Industrial Properties" and of "Telephone Rates and Values," the latter book to appear shortly.

Col. G. A. Burrell, formerly in charge of mine gas investigations for the Bureau of Mines, has received the Distinguished Service Medal for his work during the war, as chief of the Research Division, Chemical Warfare Service, U. S. A. He worked out gas masks, poison gases, incendiary bombs, smoke screens, signal lights, etc., and located the supply of helium for balloons, starting and organizing this work.

At the present time Col. Burrell is located at 62 Cedar St., New York City. He is president of the Island Refining Corporation and the Equitable Gas Products Corporation; vice president and general manager of the Raritan Refining Corporation, and a member of the firm of Richmond, Levering & Co. He is also consulting chemist for the Mine Safety Appliances Co., of Pittsburgh, Penn., having started this company in the manufacture of gas masks.

Coming Meetings

The United Mine Workers will hold a convention at Cleveland, Ohio, beginning Sept. 9.

The Bureau of Mines on Sept. 30 and Oct. 1 will hold a national first-aid and mine-rescue contest at Pittsburgh, Penn.

The National Safety Council will hold its annual meeting Oct. 1 to 4 at Cleveland, Ohio. Secretary, S. J. Williams, Chicago, Ill.

New York Coal Merchants' Association will hold its annual meeting Sept. 11-13 at Alexandria Bay, N. Y. Executive secretary, G. W. F. Woodside, Albany, N. Y.

American Institute of Mining and Metallurgical Engineers will hold its fall meeting Sept. 22 to 26 in Chicago, Ill. Chairman Chicago meeting, Carl Scholz, 547 West Jackson Boulevard, Chicago, Ill.

Indiana Retail Coal Merchants Association will hold its annual convention Sept. 17 to 18 at the Hotel Severin, Indianapolis, Indiana. Secretary, R. R. Yeagley, Fidelity Trust Building, Indianapolis, Indiana.

National Exposition of Chemical Industries will hold its first annual meeting at the Coliseum and First Regiment Armory, Chicago, Ill., during the week of Sept. 22. Manager, Charles F. Roth, 417 South Dearborn St., Chicago, Ill.

Industrial News

Logan, W. Va.—The Island Creek Mining Co. is planning for extensive development work on about 3000 acres of coal properties in this district. Frederick Halslip is general manager.

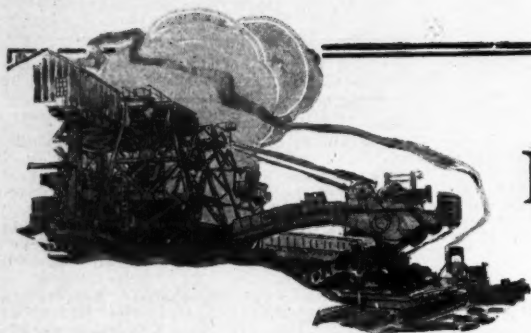
Pottsville, Penn.—The Raven Run Coal Co. is planning to take over the colliery now being run by the Girard Mammoth Coal Co., in West Mahanoy Township. The change will be made about the first of the year.

Seranton, Pa.—Staple & Bell, Inc., Mears Building, this city, has arranged for the immediate construction of a new coal breaker and development of a stripping at its properties at West Nanticoke, Penn., to cost about \$100,000.

Cleveland, Ohio—The McKinney Steel Co. has acquired additional coal properties in the vicinity of its mines along the Big Sandy River, in Pike County, Ky., and plans to open up the tract for increased output. It is proposed to provide for a production of about twice the present capacity. New electric transmission lines will be extended to the properties.

Cincinnati, Ohio—The Lunkenheimer Co., of this place, manufacturers of valves and engineering appliances, has announced its intention to build a complete new plant. The site selected for the works comprises about 70 acres in a manufacturing suburb of Cincinnati. It is expected that work on this plant will be started within the next few months. The buildings will be of steel and concrete construction and provided with all modern devices for the manufacture of materials into the finished product. The work will represent an outlay of about \$2,000,000. The welfare of the employees has been given special consideration. An 8-acre piece of land opposite the plant site will be made into a recreation center, upon which will be erected an assembly hall, clubrooms, athletic grounds and a dining room capable of accommodating 1000 persons at one time.

Pittston, Penn.—The Exeter Machine Works, Inc., has been purchased by New York men who will begin at once to develop the plant into one of the large industries of the Wyoming Valley. The company will continue the manufacture of locomotive cranes and special machinery, gray iron and bronze castings, steam and electric hoists, etc. It is said that the plant will be materially enlarged and that an addition of some 600 skilled and unskilled workers will be made. Ground has already been purchased for the addition of new buildings to the present plant, which will be erected later on. Work has been started on the relocating of certain machinery to increase efficiency and output. There will be no changes in the personnel of the office and shop forces. The executive and general sales offices of the company will now be located at 30 Church St., New York City, with branch offices in Chicago, Cleveland, St. Louis and other large cities.



MARKET DEPARTMENT

EDITED BY ALEX MOSS



Weekly Review

Market in Bituminous Coal Tightening—Car Shortage Limits Production—Export Business Seeking Bottoms—Lake Coal Moving Actively—Anthracite Industry Holding Its Own

MARKET conditions in soft coal are tightening perceptibly. Car shortages in all the principal producing districts have taken their toll in output, and prices on spot coal change almost overnight. The tendency is constantly upward. Railroads here and there have begun to stock considerable extra coal, and signs are not wanting that industry in general expects boom business in the future, as all seem eager for fuel. Buyers who were foresighted enough to protect themselves by contracts are now reaping the benefits of their wisdom, for the present prices of the better grades of fuel are well in advance of those which were in effect some months ago.

Strange to relate, however, in spite of indications that coal will be scarce and higher in price later in the year, many large consumers are apparently indifferent about their future supplies

and seem content to await developments before arranging for their winter reserves.

There is a lively demand for coal for export, but the numerous inquiries bring to light that there is a scarcity of fuel suitable for foreign use, and also that there are not sufficient vessels in which to make shipment. To alleviate this condition somewhat, the Shipping Board recently allocated fourteen more American ships to the port of Baltimore.

The movement of coal to the Great Lakes, for transshipment to the Northwest, is rather active, although the car shortage has reduced shipments to a certain extent. Reports show that there is some congestion at the upper lake docks due to slow interior movement.

During the week ended August 16 the production of soft coal dropped to 9,-

166,000 net tons, as against 9,369,000 net tons for the week preceding.

So far as anthracite is concerned, buyers are eager for the egg and stove sizes, which have been scarce all summer. It is believed that most dealers have filled the greater proportion of the orders they had on their books for domestic coal, and no real difficulties are expected unless labor troubles and poor transportation conditions should considerably hamper production. No change is to be detected in the call for the steam sizes of anthracite, which in the main continue to move slowly.

As with bituminous coal, the output of anthracite declined in the week ended August 16 to 1,642,000 net tons. Production for the week preceding amounted to 1,870,000 net tons. The total output for the coal year to date is now 33,976,000 net tons compared with 39,761,000 tons last year.

WEEKLY COAL PRODUCTION

The production of bituminous coal slumped again in the week of Aug. 16, bringing the rate of production down to near the level in the latter part of June. The recent strikes on the railroads and in the coal fields, to which causes the sharp decrease in production the first half of August are largely attributed, have been awakening consumers of bituminous coal generally to the danger of delayed purchases of coal. The lack of market has ceased to be the principal factor limiting production in most districts, and car shortage, or more broadly speaking, transportation disability, is of greatest importance. Mine-operating time reported lost in the week of Aug. 9, because of car shortage, was the highest recorded in any week since March, 1918. Production of bituminous coal in the calendar year to date is now nearly 92,000,000 tons, or 25 per cent. behind last year for the same period.

The production of anthracite declined in the week of Aug. 16 to 1,642,000 net tons from 1,870,000 in the preceding week. The output in the second week of August, 1918, was 1,925,000 net tons. The total output in the coal year to date (from Apr. 1) is now estimated at 33,976,000 net tons, compared with 39,761,000 net tons in the same period of 1918. As has been pointed out before, a large part of the decrease this year has been in the fine sizes that are not used for household fuel.

The drop in production in the week of Aug. 9, recorded last week, is shown by the reports from mine operators, since received, to have been largely due to transportation disability, the general average of time lost because of car shortage having risen from 15 per cent. to 22.5 per cent. Labor troubles, particularly in Illinois and the Southwest, also contributed to the losses of operation. The railroads' troubles appear to have been most serious in southern West Virginia, part of eastern Kentucky and in the Middle West.

Coincidentally with the increase in car and labor shortage the per cent. of time

lost because of no market decreased. To what extent the market has actually stiffened, particularly in the Middle West where it has been sluggish, remains to be seen, for when few or no cars are available or when the miners are on a strike, time lost will be charged to those causes because it is impossible under such conditions to ascertain time that might have been lost because of either mine disability or no market had cars and men been available. The principal cause for the shutdown of a mine, no matter what it be, is never given the benefit of the doubt, for it is only the immediate cause that can be determined without question.

The rate of production of beehive coke continues to gain, the output in the week of Aug. 16 being estimated at 412,500 net tons, a gain over the previous week of 23,700 tons, or 6 per cent. Substantial gains in all the eastern districts were partially offset by decreases in the far west. The output for the week of Aug. 16 was equivalent to 72 per cent. of the production in the corresponding week of last year, whereas the total for the calendar year to date is but 63 per cent. of the total for the same period of last year.

Bituminous coal dumped at lower Lake Erie ports in the week of Aug. 9 was 973,000 net tons, a large increase over the previous week and the largest weekly record since the decline began the first week of July. Total dumpings to date this year are 14,375,000 net tons, compared with 13,190,000 last year.

BUSINESS OPINIONS

Marshall Field & Co.—Current wholesale distribution of dry goods was well ahead of the same week a year ago. Compared with the same period of 1918 the number of customers in the house was much larger. Orders from road salesmen for at once delivery were largely in excess of the same week last year. Such lines as are being offered for future delivery are being freely taken. Collections are most satisfactory.

Dry Goods Economist—Business in dry goods and department stores all over the country continues in excess of expectations. Money is plentiful and is being spent freely. Everywhere the demand for commodities of all kinds is unprecedented and is reflected in the orders placed by the stores. Preparations for the usual fall trips of road men carrying staple lines are nearly completed and the first of the month will see most of them on the way to their territories. Collections are excellent.

American Wool and Cotton Reporter—The Boston wool market has been rather quiet for the week under review, but with a little more activity, and sales of 3,000,000 lb. Both fine and medium wools have been bought, but the demand for fleeces has been rather prominent. It is reported that there is no limit to the amount of business that mills would take, because of the continued consumption. The needs of cotton manufacturers have declined on the basis of the smaller number of orders placed. Many producers feel that it is desirable to wait until the new crop becomes available before accepting many new orders.

Atlantic Seaboard

BOSTON

Prices firm, but a dull market. Buyers marking time. Few developments except for somewhat higher quotations. Large tonnages at New York and Philadelphia piers. Export and bunker demand strong. No sales for New England. Reading fleet still tied up. Some retailers have better stocks, but September demand expected to renew the pressure.

Bituminous—While prices are firm it is not because of any strong demand in this particular territory. The market here is slow to respond, and aside from an undertone of anxiety among certain consumers

there is so little interest in current quotations that we are reminded of the "mid-summer dullness" that used to be a byword in August. What apprehension there is has regard for contracts made early in the season, and it remains to be seen whether monthly quotas will continue to come forward. August shipments all-rail have been considerably upset by embargoes resulting from the shopmen's walk-out, and from Hampton Roads there has been at least an equal slowing up since the seamen's strike in July.

There is less spot buying than was the case three weeks ago. Buyers here have arranged for three and four months' supply. They see the coal again coming forward in fair volume, and they are much inclined to await developments before making further purchases. There is enough good coal offering so that steamers are still in position to discriminate, and there is a disposition to pay an extra price for grades of known quality.

For fairly high grades from South Fork and special coals from the Moshannon districts there has been a slight advance in current quotations. What were quoted at \$3.25 a fortnight ago are now offered at first hand on the basis of \$3.40, but only small tonnages are being absorbed on any such basis. Such coals find their best current market at New York and other tide-water loading piers, and it is against prices there that buyers here are forced to bid.

The week has shown the extent to which shippers were obliged to reassign coal when the embargoes were clamped on early this month. There were not many moves open to them, and in most cases the coal was sent to tidewater to take its chance on the open market. Tonnages at the piers have been larger than for some months, and although there were occasional instances of weak prices on the coals less desirable for bunker use the average of sales was on a level with current quotations at the mines. A number of factors engaged in export and bunker trade have themselves made heavy purchases to clear ships, their own mines having suffered from shortage of labor and to a certain extent the shortage of cars. This has been particularly true of Philadelphia, where \$3.25 has been more or less freely paid the past few days for only fair grade low volatiles.

The offshore trade is reported strong in all directions, and especially so for Hampton Roads loading. The agencies see no end to the demand through the fall and winter, and while prices remain on their present basis of \$6@6.50 there will be little interest on their part in any demand from New England. The few inquiries that develop are promptly turned down and the great volume of the smokeless coals is being sent overseas. The demand for prepared coal is also strong in the West, and this is another element that will tend to make the market even firmer as the season advances. Despatch is slow at the Virginia terminals and the movement of coal from the mines more or less irregular, but delays so far have not been serious and there seems no special apprehension on this score.

At this end, distributors are still having difficulty getting forward Pocahontas and New River for distribution inland. None of the storage plants has on hand any surplus, and should there be any protracted interruption to through traffic all-rail it is tolerably certain that emergency supplies would be hard to secure. Experience has shown that once shipments from Hampton Roads begin falling off at this season the tonnage is seldom made up, and very often receipts here diminish steadily as winter draws near. The difference this year, so far as this territory is concerned, lies in the fact that never was New England so little dependent upon water deliveries generally, of bituminous, and on Hampton Roads in particular.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambria and Somersets
F. o. b. mines, net tons...	\$2.60@3.10	\$3.00@3.60
F. o. b. Philadelphia, gross tons...	4.79@5.35	5.20@5.80
F. o. b. New York, gross tons...	5.10@5.70	5.50@6.20
Alongside Boston (water coal), gross tons...	6.85@7.35	7.10@7.85

Georges Creek is quoted at \$3.70 per net ton, f. o. b. mines. Pocahontas and New River are quoted at \$6.25 @6.60 per gross ton f. o. b. Norfolk and Newport News, Va., in response to export demand. There continue practically no sales for coastwise shipment.

Anthracite—There are no new developments in anthracite. Receipts here are still affected by the continued tie-up of the Reading fleet of tugs and barges. It appears that the operating officials in charge

made a recommendation two weeks ago, but thus far the Government reviewing authority has not seen fit to act.

From New York there have been shipments lately in fair volume, and now that the embargoes have been lifted there is again a reasonably good movement all-rail. Certain of the retail dealers report somewhat better stocks on hand, but it is almost certain that the end of the vacation season will cause a renewed demand for deliveries. In September we look to hear more said about the shortage here of domestic sizes.

NEW YORK

Local receipts of anthracite increase, but demand continues to exceed supply. Egg and stove lead the list, but dealers accept others sizes. Buckwheats moving easily at steady prices. Demand for bituminous easy; stocks increase. Increased demand for Pennsylvania coals in Canada due to shortage of Nova Scotia coals. Miners are restless.

Anthracite—Receipts of anthracite at this market, according to reports, show a steady increase. This goes a long way to allay the fears of a serious fuel shortage here next winter. At the same time there is a strong feeling that retail dealers have delivered many orders during July and August that ordinarily would not have been delivered until September or October. In view of these facts it is not likely that conditions here next winter will be anything like what was pictured in the spring or early summer, when nearly everyone in the trade was preaching "early buying" as a protection against a near-fuel famine.

Production is strong and considerable coal continues to be sent into the West and into Canada. Reports from the coal fields indicate some uneasiness among labor, probably due in a large degree to the increases in pay secured by many other industries. Not much comment was heard regarding the demands the mine workers propose making upon the operators.

Locally the greatest shortage exists in egg and stove sizes. The demands remain heavy, but dealers are inclined to relieve the situation by accepting chestnut and pea in lieu of the larger sizes, although there is a slow market here for either of these. Most dealers have a heavy tonnage of these coals in their yards, some of which they took in order to obtain the larger coals.

The steam coals are moving freely, considering the season. Dealers are willing to take a proportionate share of these coals if assured deliveries of egg and stove. The large producers are holding quotations at nearly full circular, and these are being obtained for the better grades.

Dumpings of anthracite at the local railroad piers for the week ended Aug. 22 were 6242 cars, as compared with 6153 cars the week previous and 5866 cars during the week ended Aug. 8.

Quotations for company white ash coals, per gross ton at the mines and f. o. b. New York tidewater lower ports, during August, follow:

	Mine	Tidewater
Broken.....	\$5.95	\$7.80
Egg.....	6.25	8.10
Stove.....	6.50	8.35
Chestnut.....	6.60	8.45
Pea.....	5.20	6.95
Buckwheat.....	3.40	5.15
Rice.....	2.75	4.50
Barley.....	2.25	4.00

Bituminous—The labor unrest which is prevalent in nearly all industries is also to be noticed in the coal industry to a certain extent, and as a result production is not keeping up to the mark set for it by the producers. A goodly portion of the decrease is attributed to the various railroad strikes, which result in poor car supply.

There has been a let-up in demand, and various grades which a week ago were short are more plentiful. While the market shows a general change for the better, the increased demand has been for the better grades of coal which are hard to get unless there is a contract.

There has been a heavy cut in production in the West Virginia coal field as a result of the strike of shopmen on the Chesapeake & Ohio RR., and many miners are reported to have left for other regions.

New inquiries are being received concerning coal for export, but when the prospective buyer is asked about vessels a new situation arises. Shipping has not improved sufficiently to take care of all shippers, and those conversant with the situation say they can see no great change for some time to come.

There has been an increased demand for Pennsylvania coals from the territory in and about Montreal because of the delay in securing shipments from Nova Scotia.

It is pointed out that this is due in part to the scarcity of ships to carry the coal from Cape Breton to Montreal, and that the rail shipment rates from Pennsylvania have not risen nearly as much as water shipment rates. Another factor is the rise in the cost of mining, due to the lack of labor, the mines having lost a heavy percentage of coal cutters.

The local situation is uninteresting. While stocks show an increase over the previous week, there has been a steadiness in quotations, which remain on substantially the same basis as a week back.

Contract coals move on a heavy basis and the spot buyer finds it difficult to get any free lots. Free coals are not so plentiful as to cause any alarm.

There were 5427 cars of bituminous dumped at the local railroad piers during the week of Aug. 22, as compared with 5733 cars the previous week and 6463 cars the week ended Aug. 8.

There were not many changes in the current quotations for the various grades of coal at the mines. The range is as follows:

	Spot
South Fork (best).....	\$3.25@3.50
Cambria (best).....	3.00@3.25
Cambria (ordinary).....	2.65@2.90
Clearfield (best).....	3.00@3.25
Clearfield (ordinary).....	2.70@3.00
Reynoldsville.....	2.70@2.90
Quemahoning.....	3.10@3.25
Somerset (best).....	3.00@3.25
Somerset (poor).....	2.65@2.75
Western Maryland.....	2.50@2.75
Fairmont.....	2.10@2.35
Laird.....	2.60@2.65
Greensburg.....	2.50@2.60
Westmoreland, 1 in.....	2.75@2.90
Westmoreland run-of-mine.....	2.50@2.60

PHILADELPHIA

Anthracite demand still strong for egg and nut. Good shipments last week, but falling off in evidence again. Good stocks of chestnut. Pea also heavily stored. September price talk current. Can individuals maintain their schedules? Some prediction of lull in trade. Retailers have orders well filled. Moderate new business offering. Irregular shipments at minimum. Steam coal quiet, with fair stocking of buckwheat. Bituminous in demand. Fairmont price jumps. Good storing.

Anthracite—The local market is still anxious for coal, principally egg and stove, which have been short all summer. Due to the railroad troubles in New England a goodly supply of all sizes was received here for a short time, but this is changed now, as shipments once more are being directed to other territories, probably even to a greater extent in order to make up the loss due to the embargoes which had been placed. As the railroad strike seems over for the time there is no doubt that this market will again have to get along on meager supplies.

As to chestnut and pea, every one is about satisfied. It is only the occasional dealer that is actually in need of any chestnut, and most dealers have good stocks, better in fact than they have had of this size for several years. As yet there has been little inclination on the part of dealers to hold orders on chestnut, for they realize it will be good stuff to have around next winter. The only real difficulty any of them have is in the matter of tying up so much money in stock, for at the present rate of coal it does not take many cars to use up several thousands of dollars. With pea it is somewhat different, so far as the willingness of the dealers to take in stock is concerned. Lots of them figure they have more than they will be able to dispose of, although these are dealers who have not been in the practice of storing pea. They have taken in this size quite liberally all summer long in order to procure the much needed sizes, and they are now becoming just the least timid and are asking shippers to hold up orders. Still there is the other class of dealer, who simply stores all he can get, as he figures there has never been a time in the past four or five years that his yard was not about bare of this size when the middle of March rolled around.

There is much speculation current as to just what the September prices will be. There can be no denying that there is a falling off in the rush for coal that was evident a few weeks since, and many of the operating companies seem to feel that there will be a general let down in the demand before real retail buying commences. Should this be the case it will be interesting to watch the individual shippers to see what action they will take with their prices, which are now so far in advance of the company figures. It would not be at all surprising to see the independent

dealers allow their present prices to stand and simply ask premiums on the scarce sizes—egg and stove. Even at this they are bound to have some difficulty in disposing of pea coal, as much of their trade is pretty well filled up on this size now.

It is a pleasure to report that there has been a considerable falling off in the sales of carload lots of anthracite to manufacturing plants for distribution to employees. It begins to look as if the meeting held between some of the dealers and the operators in New York some weeks ago is beginning to bear fruit. At that time the operators, producing about 90 per cent. of all the anthracite, promised to give their best efforts toward wiping out the practice. This is a feature of the trade which for years has had a bad effect on the retail trade and has been the cause of much friction between them and the operators.

There has been little appreciable change in the steam situation. Certainly it has not gone backward, but it is a little too early to expect much in the way of improvement. Certain big consumers of buckwheat have lately increased their calls for this size and, if anything, they have in stock more than their usual tonnage, as they seem to fear car shortage or rail disturbances during the winter. Outside of this there is little change. While there has also been some increased buying in rice, it has not been very noticeable, and barley is still heavy.

Bituminous—The soft coal trade is in a somewhat feverish condition as to price. Figures have changed almost from day to day, and prices when given were only for a day at the most, as there was a constant tendency upward. This has been particularly true of coals from the Fairmont region, where there have been quite extensive price increases. Most of the trouble has been due to short car supply, being in many cases as low as 40 per cent., while the best reports do not give more than 60 per cent. There is also a greater tendency on the part of bituminous users to take in stock now, especially in the iron trade. Lately there have been some quite noticeable signs of a revival of this industry, and the buying by them has been quite liberal of late. The railroads, too, have at least begun to take in considerable extra coal. All of these factors have had the effect of causing the spot prices to move upward, until they are now well in advance of most of the contract figures which were made some months ago. The rising market has also had its effect on those holding contracts, to the extent that they are asking for their full quotas.

The prices per net ton at the mines are about as follows:

Georges Creek Big Vein.....	\$3.25@3.40
South Fork Miller Vein.....	3.25@3.40
Clearfield (ordinary).....	3.00@3.10
Somerset (ordinary).....	2.90@3.05
Fairmont lump.....	4.25@3.35
Fairmont mine-run.....	3.10@3.20
Fairmont slack.....	2.50@2.65
Fairmont lump (ordinary).....	2.90@3.00
Fairmont mine-run.....	2.70@2.80
Fairmont slack.....	2.50@2.65

BALTIMORE

The fact that local demand is not over-brisk for soft coal more than offsets by heavy export calls. Market stiffens during week. Hard coal receipts fair, but premiums are heavy on considerable portion.

Bituminous—From the local viewpoint the market might be stamped as almost dull. There is no rush to get coal for storage here, and buyers are still discriminating. Export coal, however, has tended to stiffen the trading as a whole. There is such a lively demand for coal for foreign delivery that it cannot be met promptly either in the matter of coal deliveries at tide or in the supply of vessels to carry it. The week opened a little weaker so far as price was concerned, probably due to a better run of coal over Sunday, but this changed quickly to a stiffer market. At present prices are far above the old government war maximums, and extra strength has been exhibited by gas coals as a result of the export movement. Steam coals for bunker are also in constantly increasing demand. Prices on steam coals range to the trade, mine basis, about as follows: Pools 9 and 71, \$3.50@3.75. Pool 10, \$3.25. Pool 11, \$2.75@2.95. Pool 44, \$2.65.

On gas coals the prices to the trade are about as follows, although there is frequently quite a range that carries quotations 25c. or more above the average figures: Fairmont low sulphur, three-quarter, running to Pool 37, \$3.50. Fairmont run-of-mine, Pool 34, \$2.50. Medium sulphur,

three-quarter, Pool 33, \$2.75@3.00. Youghiogheny and Westmoreland Pool 36, \$3.50@3.75.

The export movement continues heavy, a total of 52,488 tons going out on foreign bound ships for the week ending Aug. 11. Fourteen more American ships were announced allocated to Baltimore for immediate coal loading by the Shipping Board.

Anthracite—Receipts of anthracite are fair as a whole and are still too largely of the independent kind, bearing premiums, to suit many. It is admitted, however, that the run of Company coal is improving here. Premiums asked for the most part are around 75c., although there has been some talk of the asking of premiums of \$1.00@1.25. While it is said that some coal has been taken at those figures, the trading on that basis has certainly not been large. Stove size remains scarce. Dealers here do not seem to be worried over the talk of a famine. There is probably more coal in cellars than for some years past, and while there is little or no reserve, the prospect seems bright for receipts enough between now and Oct. 15 to take care of the business that will go on the books with the coming of cool weather.

Lake Markets

PITTSBURGH

Market stiffer and gas coal distinctly higher. Stocks of steam coal, not of gas coal. Labor uncertainty now among coal consumers as well as coal producers.

The coal market has gained farther in strength. Steam coal is distinctly stiffer, while gas coal is higher by at least 25c., and byproduct is higher by an indefinite amount, so much depending on tonnage and delivery. In some cases byproduct ovens have paid very high prices for small lots for immediate shipment, when they needed the coal badly, but they would not pay the same price for large lots and extended delivery. Even on the most conservative comparison byproduct coal is higher than a fortnight ago.

Conservative coal operators suggest that the talk of coming scarcity in coal is exaggerated. They assert that steam-coal users have in many cases laid in very comfortable stocks. A shortage of steam coal, according to their analysis, depends upon labor and transportation conditions—that is, there may be a shortage next winter and there may not be. As to gas coal, this analysis does not apply. The stocks of gas coal are small, not because gas-coal users have been less foresighted than other consumers, but because it has been impossible for them to accumulate stocks, their current consumption having been almost equal to the quantities obtainable for months past.

The coal industry has nothing like a monopoly of labor unrest. There is now so much uncertainty as to labor among coal consumers, including in particular the steel industry, that matters are almost at a stand-off in this respect. It is not without the range of possibilities that manufacturing operations in the iron and steel industry will be at a much lower rate within a few weeks than at present.

Coal production in the Pittsburgh district is at approximately the same rate as for several weeks past, at about two-thirds the full mine ratings, but at 80 or 90 per cent. on the basis of the men on payrolls. Car shortages are more in evidence, and limit production as compared with demand but not as compared with production one month or two months ago.

We quote the market approximately as follows, except for occasional premium prices paid on small prompt lots: Steam slack, \$1.90@2.10; gas slack, \$2.15@2.40; steam mine-run, \$2.35@2.60; gas mine-run, \$2.75@3; 2-in. gas, \$2.90@3.20, per net ton at mine, Pittsburgh district.

BUFFALO

Jobbers uncertain as to bituminous outlook. They do not like to see prices pushed up. Demand not increasing. Cars more scarce. Anthracite not moving quite so fast.

Bituminous—The trade outlook is not satisfactory to the jobbers. Some of them say that the Pittsburgh market is to blame for their difficulties. They find an asking price in that market that they cannot meet. They feel that it is wrong to urge prices up at this time, for there is nothing to warrant it unless it is on account

of the shortage of cars; and that ought to be allowed to take care of itself. Cars are bound to be in small supply from this time on, and that condition ought to be the regulator of prices.

At the same time it is claimed that Pittsburgh shippers are using every opportunity to force higher prices, and the result is that they are quoting more than coal can be sold for here. The best posted of our jobbers admit that they are puzzled over the situation. They are not pleased at the prospect. As a rule they would like to see the trade get together and ask uniform prices, such as have been asked for some time back, and let the trade take its own course.

While it is hard to say just what the Buffalo bituminous prices are, as they are far from uniform or steady, the following quotations are given out as the best representation of the market: \$4.55 for Allegheny Valley, all sizes; \$4.80 for Pittsburgh, and No. 8 lump; \$4.65 for same, three-quarter; \$4.20 for mine run and \$4.10 for all sack, with \$4.60 for smokeless and \$5.70 for Pennsylvania smithing, all per net ton, f.o.b. Buffalo.

Anthracite—The situation does not change much. Consumers are asking for more coal than the shippers can provide, as they have been doing for some time. The supply just now is less than for July, as the miners have been off more than usual attending church holidays.

The state of the anthracite trade is such that not much can be obtained from the Independent companies. A pretty stiff premium is asked, which is not easy to obtain here. The jobbers refuse to pay it, and they object to it as likely to make trouble. If the Government is waiting for an opportunity to resume control of the entire coal trade it would be easy to give extra prices as a reason for it.

The Buffalo prices of anthracite, as quoted by the leading shippers, are as follows:

	F.o.b. Cars, Gross Ton	At Curb, Net Ton
Grate.....	\$8.55	\$10.20
Egg.....	8.75	10.60
Stove.....	8.95	10.80
Chestnut.....	9.05	10.90
Pea.....	7.40	9.25
Buckwheat.....	5.70	7.75

Lake shipments of anthracite are not quite so heavy as they were, but they still maintain a good midsummer average, being for the week 113,600 net tons, of which 41,600 tons cleared for Chicago, 31,900 tons for Milwaukee, 10,000 tons for Green Bay, 9,200 tons for Port William, 9,200 tons for Port Arthur, 7,600 tons for Sheboygan, 3,000 tons for Racine and 1,100 tons for Kenosha.

CLEVELAND

The coal market in northern Ohio is tightening. Coal again is moving fairly freely toward Lake Erie ports, and with car shortage still acute northern Ohio supplies are pinched. Prices show a firmer tendency daily.

Bituminous—The supply in this market the past few days has been the smallest of any like period in more than a year. If anything, car supply has been more "spotty," despite the use of the railroad administration's new cars. Mine labor almost daily grows less efficient, grumbling over postponement of the opening of wage negotiations. With the railroad shopmen returning to work, dock workers at the head of the Great Lakes have lost heart, and the lake trade is picking up, thus diverting tonnage that for the past two weeks has been going to the lower lake region.

The net result of all this is that receipts of steam coal in northern Ohio in the past week have fallen about 10 per cent., while demand has increased about 15 per cent., owing to the settlement of several local strikes of fair proportions. It appears that practically every steam-coal user in the district is now seeking to stock, and this condition is reflected almost directly in prices. Some operators now are more disposed to contract for fair tonnages, and in several instances have anticipated increases by adding slightly to present market levels.

Domestic bituminous has moved better in the past few days than at any time in months. While householders prefer Pocahontas and anthracite, apartment houses and similar institutions are stocking heavily with bituminous, and business from this source has become quite pronounced lately. Some business also has come from smaller consumers who have been unable to obtain Pocahontas or anthracite and are fear-

ful of winter catching them with their bins empty.

So far no coal dealers, wholesale or retail, have been summoned before the local grand jury, which is investigating high prices and alleged profiteering. Neither has any mention been made to date of coal prices held to be excessive.

Pocahontas and Anthracite—The situation in these grades continues unchanged. Receipts are 10 to 15 per cent. of what dealers could dispose of, and demand shows no sign of abatement. Most dealers are entering orders in turn and are giving no promise of delivery. Some dealers have marked forked Pocahontas up 25c. a ton.

Lake Trade—Last week's movement was in the neighborhood of 750,000 tons, many boats having loaded storage cargoes to hold until the docks at the head of the Great Lakes are again working. Consequently, with the strike at the point of being broken, the real dip in bituminous loading will not come until next week. The week following should see shipments up to the 850,000-ton mark, or better. Vessel fuel still is less than 50 per cent. of normal. Car supply in the past week has been sufficient to supply the curtailed demand. Early in September will see vessel tonnage wanted for grain, and bituminous coal will cut much less of a figure in the lake trade from now on than it did earlier in the season.

DETROIT

With transportation conditions working back to normal, following the shopmen's walkout, Detroit coal buyers show diminishing interest in coal.

Bituminous—Jobbers find that the interest of Detroit buyers of bituminous, which was apparently stimulated by the curtailment of transportation facilities due to the strike of railway shopmen, is again giving way to an attitude of indifference. Orders are scattering and for small tonnages, while a large number of the manufacturing establishments and other large users of steam coal seem content to await developments at a later period of the year before proceeding to put in winter reserves.

Jobbers find that many of the city's large consumers of steam coal have not yet reached the bottom of reserves that were built up last fall. This is attributed both to the fact that last year's reserves were unusually large and contained much low-grade coal and to the circumstance that many of the industrial plants were either closed or operating at a low production basis for some time during the earlier part of the year, pending reversion from war work to the normal activities of the plants or because of delays in obtaining working material.

Some complaint is made of car shortage, particularly in the West Virginia districts. Coal on tracks in or around Detroit is not at present a market factor of much importance. Smokeless is practically out of the market except for small consignments of mine-run on which the price holds around the equivalent of \$3.60 for net ton, f.o.b. mines.

Four-inch West Virginia lump sells at about \$3.50 on the same basis, with two-inch lump quoted at \$3.25 to \$3.50, mine-run \$2.75 and slack \$2.25 to \$2.60. For Hocking domestic lump the mine price is \$2.75 to \$3, while nut is quoted \$2.50 to \$2.75, mine-run at \$2.25 and slack \$1.60 to \$1.75. Jackson Hill is about \$1 a ton higher than Hocking.

Anthracite—With anthracite reaching the city only in small amounts, dealers fear there will be an inadequate supply for winter needs of household consumers. There is also complaint of delays in transportation. Several of the retailers are declining to accept orders for future delivery, when they are unable to fill them from stock piles.

Lake Trade—Owing to the strike of dock workers at various Lake Superior ports, lake coal shipments are of much smaller volume than a month ago. A considerable number of carriers are at ports at the head of the lakes awaiting unloading, and some vessel owners are declining cargoes for that district pending adjustment of the labor troubles.

COLUMBUS

Ohio coal trade showing strength in every department. Splurge caused by strike of railroad shopmen is being continued even after strikers return to work. Higher prices prevailing in every section. Growing car shortage complicates situation.

The steam trade, which has been the weakest feature of the market, has suddenly jumped into prominence and is now one of the strongest departments. Screenings especially, which were a drag on the market for months, are becoming scarce

and there is active bidding for available stocks. In fact, all sizes have shared in the general improvement, and the boom days are again at hand. Whether it will develop into a runaway market remains to be seen.

The factor of growing car shortage is expected to still further strengthen the market, and higher prices are confidently looked for. Mine-run is quoted between \$2.50 and \$2.75, while screenings are strong around \$2 and \$2.10. Lump, which was put up to \$3 early in August, is now somewhat higher and prices of \$3.50 are freely offered. Domestic lump, Pocahontas and other so-called fancy grades are exceedingly strong. Orders for Pocahontas are not being filled promptly. Retail prices have advanced in conjunction with the higher prices at the mines.

Railroads are taking a large percentage on their fuel contracts as the freight movement is increasing. Steam users are becoming alarmed, and some are trying to accumulate reserves to guard against a stoppage of shipments. Iron and steel plants are better buyers and general manufacturing appears to be improving as far as coal orders are concerned.

The lake trade is rather active, although the car shortage is reducing shipments to a certain extent. This is shown by records of loadings at the principal docks of the lower lake region. Reports show that there is some congestion at the upper lake docks due to slow interior movement. Lake prices are firm at the figures which have prevailed for the past few months.

Production in Ohio fields is being reduced by the car shortage, which is becoming worse on many of the coal-carrying roads. The eastern Ohio field is probably the greatest sufferer, with a car supply approximating about 40 per cent. of needs. In the Pomeroy Bend field the output is estimated at about 50 per cent., and the same figures are reported in the Hocking Valley. Other Ohio fields are inconvenienced by lack of cars and the output is steadily falling off.

CINCINNATI

Prodier higher prices. Car shortage to blame. Winter weather will seriously affect situation.

Coal prices have remained firm for the most part, with surplus stocks increasing as the conditions in the mining fields continue to right themselves following the havoc wrought when the mines were closed because of the railroad shopmen's strike several weeks ago. It will take several weeks, however, for conditions to get back to where they were before the strike came on.

Coal prices will go up, about Sept. 1, say the local coal men, and they blame Walker D. Hines, United States Railway Administrator for it. They complain that the car supply is inadequate, despite the fact that the State Utilities Commission inspectors report that all cars demanded are supplied.

There are long strings of new coal cars, it is reported, which have not been allotted to the railroad companies operating under Federal direction. The operators deny the optimistic reports of the situation which are given to Congress by the Railroad Administration. The approach of winter and heavier demands will greatly affect the situation. Figures have been prepared to show that there is a car shortage.

Local domestic consumers have practically all laid in their winter supply, and the big industrial users have placed their orders for the winter. Deliveries are still uncertain, however, and some of those who waited until the last moment in the hopes of reduced prices may find themselves rather pushed for coal when the time for its need arrives.

It seemed to be the contention of the coal users that with the war at an end, transportation facilities would speedily return to a pre-war basis and that there was no need to worry about a shortage of fuel this season. Then, too, they pointed out, there was the gas to fall back on. But right here is another argument in the coal man's favor, for the public long since has been advised by the gas company officials that there is absolute certainty of a shortage in gas this winter.

LOUISVILLE

Situation about the same, with operators suffering from car shortage and miners growing more dissatisfied. Continued good demand for block coal.

Mines in Kentucky for the past three weeks have averaged two days a week, and in some instances have not done that well. The car shortage continues serious,

although operators on car pool territory are apparently getting plenty of cars and are selling coal freely in territories that would be covered by the Southern Appalachian trade if cars could be had. Due to the small output and high cost of production, eastern Kentucky is unable to compete in block coal prices with West Virginia, which is selling a good deal of coal on the local market. Western Kentucky block coal is also somewhat stronger in prices and demand. Mine-run and four-inch steam is in fair demand, with screenings still a little draggy. Production is so low that steam prices are being well maintained.

During the past week the Louisville & Nashville announced that it would re-employ all shopmen laid off in the spring, but it is reported that the men are in other lines are coming back very slowly, while cars in the worst shape ever known. Eastern Kentucky operators are meeting with a good demand from the South, but are oversold on block coal and are filling very few new orders.

Average prices for coal from eastern and western Kentucky based on prices quoted from a number of mines are as follows:

Eastern Kentucky—Block, \$4.25@4.50, average, \$4.39. Some block selling at \$4.75 @5; mine-run, \$2.50@2.75; nut and slack, \$2.10@2.25.

Western Kentucky—Block, \$2.05@2.75, average, \$2.44; mine-run, \$1.90@2.35, average, \$2.04; nut and slack, \$0.60@2.35, average \$1.07.

BIRMINGHAM

Increased strength shown in steam trade, the better grades moving easily. Domestic market strong, no stability of prices obtaining in the spot market. Production suffering sharply from shortage of cars. Labor also working irregularly.

The better grades of steam coal are moving with ease in the local market, while the medium and lower grades are showing some improvement in demand, quickened by the shortage in car supply. Quotations are about as follows per net ton mines: Big Seam mine-run, \$2.25@2.45; Black Creek and Cahaba mine-run, \$3.25@3.45; Carbon Hill, \$2.50; Pratt, \$2.85.

All the essential elements for a runaway domestic market are noticeable, spot cars of Black Creek and Cahaba lump and nut bringing \$5.00@5.50 and Montevallo \$5.50@6.00 per net ton mines. It is understood that some of the smaller operators having medium grade steam-domestic coal are considering resumption of steadier operations and storing their stock for future disposition in order to have domestic sizes to meet the strong demand in that channel of the trade.

The car supply on the Louisville & Nashville and Southern Railway is only about 50 per cent. of requirements, equipment on the Frisco being a little more plentiful. Mines on all lines are losing considerable time and tonnage due to railroads not being able to furnish adequate equipment, many operations having ample business in hand to maintain steady schedules having to suffer serious loss for lack of equipment for loading.

Coke

CONNELLSVILLE

Sudden advance in prices due to absorption of all floating supplies. Operators very bullish. Consumers not so confident.

The combination of a stiffer market for coal and the sudden demand of half a dozen coke consumers, usually supplied by their own ovens, has lifted the coke market about 75c. Three or four weeks ago a surplus of furnace coke on track developed and operators experienced much difficulty in moving it. While the holders had an asking price of \$4, many of them were willing to shade this price. There were occasional sales, not affecting very greatly the visible supply, until about ten days ago eager buyers appeared and the whole accumulation was cleaned up in a short time, some of it at less than \$4 and some at that figure. Then there were sales at higher prices, but it appears that the sales at higher prices were of no large volume, though amply sufficient to show where the market stood, \$4.50 having been paid in several instances. The whole coke-making trade promptly became bullish and asking prices have ranged from \$4.75 to \$5.25 on furnace and up to \$6.25 on foundry. At the same time producers all withdrew from the contract market.

For the time being at least the market is plainly on the advanced level, but consumers, together with a few producers, have doubts whether it will stay there. A

similar movement in late fall would be attended by no such doubts. There is also the disturbing factor of labor conditions in the iron and steel industry, whereby idle blast furnaces that were contemplating getting into blast are disposed to wait until the labor situation is more clearly defined.

The market is quotable at about \$4.75 for spot and prompt furnace coke, with some producers asking more, and at \$5.50@6.25 for spot and prompt foundry, depending on brand, per net ton at ovens.

The "Courier" reports coke production in the Connellsville and Lower Connellsville region in the week ended Aug. 16 at 236,182 tons, an increase of 14,012 tons.

Buffalo—The strikes on the upper-lake ore docks have disturbed the movement of iron ore and somewhat affected the coke situation, but the furnaces as a rule have good stocks of ore. It will take some weeks to get the fleet to moving normally again. Meanwhile coke prices remain at \$7.60 for 72-hour foundry, \$7.25 for 48-hour furnace and \$7 for off grades, with domestic sizes selling at \$6.75 and breeze at \$5.75 per net ton, f.o.b. cars, Buffalo.

Middle West

ST. LOUIS

Mines in Standard district still on strike. Car supply gives mines one day's work per week. Steam demand is easy, but domestic demand picking up, especially in country. So much uncertainty that everything is entirely a day-to-day proposition.

The action of the miners at Springfield on the 19th in voting to call off the strike in the Standard and Mt. Olive fields, as well as in the Springfield and Peoria districts, has not necessarily meant that they are going to work. The miners in the Mt. Olive district for the most part went back at once. In the Standard district they reported for work and asked the superintendent if he would guarantee that no fines would be assessed against them for their failure to work. When they were told that the operators could not make any guarantees, and that it would have to be left to a conference of the union officials and the operators to adjust, they said they would not go to work. Some mines did not start up at all. Some mines started, but on Saturday, the 23d, twelve or fourteen mines in the Mt. Olive and Standard fields that had been working went idle again over the fine, the men refusing to work if they were going to be fined for their violation of their agreement. This is expected now to spread to all other mines in the district that have been working for the past few days.

The car supply in the Standard field is something that is beyond understanding. After being idle for two weeks the mines on the Illinois Central, the first day they resumed operations, could not get enough cars to work with.

Rumors here are to the effect that the Louisville & Nashville and other southern and eastern roads have been shipping their equipment south and east. This week several hundred Illinois Central cars were found on the Baltimore & Ohio, indicating that the Railroad Administration is distributing the few remaining cars in the west over the western terminals of eastern roads after the eastern road equipment has been moved east. The Mobile & Ohio is the only road in the field that seems to be getting full car supply.

The demand is extremely easy on steam coal from the Standard and Mt. Olive fields. Domestic is easy from the Standard field

and there is no rate called for. The Mt. Olive field is in better condition, there being a good demand for this coal north and west. The Mt. Olive prices throughout the recent trouble have remained at their fixed schedule, while Standard has gone up and down, according to supply and demand.

At the close of the week Standard 2-in. lump was selling at about \$2.25, screenings at \$1.75 to \$2, mine-run at \$2 to \$2.15, 6-in. lump and 3 x 6 egg, \$2.50 to \$2.75.

In the Du Quoin field the car supply has kept the mines to two days a week. There are no labor troubles here. A good tonnage of railroad coal is moving out on account of equipment being furnished for that purpose.

In the Cartersville field of Williamson and Franklin Counties the car supply is the one great problem. No mine in the Williamson County field has succeeded in getting cars for more than five full days' work all told between the first and twentieth. Little better time has been made in Franklin County. No mines are working more than four days a week at the most, and these mines have four roads, averaging one day's car supply from each. The Illinois Central is in perhaps the worst shape, both as to equipment and as to movement. The Iron Mountain is a close second.

The railroad tonnage continues good. There is a demand for all sizes, although steam is a little bit heavy, especially screenings.

The movement of foreigners has about ceased for the time being. This, however, may change any time unless working conditions improve.

Practically no anthracite is coming into St. Louis, and there is no smokeless moving. Arkansas has been promised, but it has never been shipped, and orders taken in May are still unfilled.

On the first of September the hauling price for domestic coal in St. Louis increases to \$1.25 for domestic and 75c. for steam. Coke hauling for domestic will be \$1.75, and coke prices increase on the first on both byproduct and gas house 75c. per ton.

MILWAUKEE

Railway strike troubles and the walkout of ore dock workers at Lake Superior ports tend to slow up the coal trade. Scarcity of domestic coal.

The coal business at Milwaukee at present is slack, both coming and going. The strike at the Lake Superior ore docks forced a large number of coal carriers to tie up to the docks, thus putting quite a check on receipts by lake. On the other hand, the railway strike operated to cut down the outward flow of coal by rail. Things are expected to improve from now on, however. Small dealers report a scarcity of domestic coal, both anthracite and Pocahontas. Receipts of anthracite thus far by lake aggregate 493,908 tons, a gain of 154,913 tons over last year's record up to the present time. Soft coal receipts aggregate 1,866,971 tons, or a gain of 10,758 tons over 1918.

P. & R. Ry.	1,131,451
L. V. R. R.	1,111,420
C. R. R. of N. J.	544,171
D. L. & W. R. R.	980,100
D. & H. Co.	731,385
Pennsylvania R. R.	433,517
Erie R. R.	663,421
N. Y. O. & W. Ry.	176,524
L. & N. E. R. R.	280,345
Total	6,052,334

Prices of coal in Milwaukee are about as follows:

Anthracite:	Per Ton
Chestnut	\$12.60
Stove	12.50
Egg	12.30
Pea	11.10
Buckwheat	9.75
Bituminous (Domestic):	
West Virginia splint, screened	\$7.75
Hi-Heat	7.75
Hocking lump, egg and nut	7.50
Pittsburgh, screened	7.50
Pocahontas, mine-run	8.50
Pocahontas, lump, egg and nut	10.75
Cheerful Chunks (Kentucky, for grates)	9.25
Smithing	8.50
Cannel (Kentucky)	11.75
Steam Coal:	
Youghiogheny, screened	6.75
Youghiogheny, pile run	6.50
Youghiogheny, screenings	5.50
Pittsburgh, screened	6.50
Pittsburgh, pile run	6.25
Pittsburgh, screenings	5.50
Hocking lump, screened	6.50
Hocking lump, pile run	6.25
Hocking lump, screenings	5.50
West Virginia splint, screened	6.75
West Virginia, pile run	6.50
West Virginia, screenings	5.50
Kentucky lump, screened	7.50
Kentucky lump, pile run	7.25
Kentucky lump, screenings	5.50
Pocahontas, mine run	7.50
*Pocahontas, screenings	
Smithing	7.50
*Kanawha Gas, mine run	

*Sold up and out of the market.
An extra charge of 75c. per ton for coal carried in.
An extra charge of 25c. per ton for less than ton lots.

General Statistics

ANTHRACITE SHIPMENTS FOR JULY, 1919

The shipments of anthracite for July, as reported to the Anthracite Bureau of Information at Philadelphia, show a substantial increase over the preceding month and exceeded a total of 6,000,000 tons for the first time since October, 1918. The tonnage sent out in July amounted to 6,052,334 tons, an increase over June of 432,743 tons, or 7.7 per cent. Compared with July, 1918, when production was abnormally stimulated by war conditions, the shipments this July showed a decrease of 1,032,441 tons. A large part of this decrease, however, was in the production of steam sizes from washeries that are not in operation this year. Washery production in 1918 averaged 550,000 tons a month, whereas in recent normal years the washery output has amounted to between 150,000 and 250,000 tons a month. Compared with July, 1916, the latest normal year in anthracite production, the shipments this July showed an increase of 619,456 tons.

The shipments by companies were as follows:

	July, 1919	July, 1918	Coal Year, 1919-1920	Coal Year, 1918-1919
P. & R. Ry.	1,131,451	1,420,624	4,416,397	5,356,093
L. V. R. R.	1,111,420	1,319,731	4,049,200	5,176,042
C. R. R. of N. J.	544,171	641,547	2,033,175	2,359,412
D. L. & W. R. R.	980,100	1,034,561	3,682,922	4,095,620
D. & H. Co.	731,385	820,530	2,664,082	3,191,764
Pennsylvania R. R.	433,517	504,630	1,591,343	1,929,121
Erie R. R.	663,421	824,242	2,483,139	3,037,121
N. Y. O. & W. Ry.	176,524	167,656	656,110	717,326
L. & N. E. R. R.	280,345	351,254	1,032,187	1,345,574
Total	6,052,334	7,084,775	22,608,555	27,208,073

Coal and Coke Securities

New York Stock Exchange Closing Quotations Aug. 25, 1919

STOCKS	Ticker	Abvn.	Bid	Asked	BONDS	Bid	Asked
American Coal Co. of Allegheny	(ACL)	45			Cahaba Coal, 1st Gtd. 6s, 1922	96 1/2	
Burns Brothers, Com.	(BB)	135		136	Clearfield Bituminous Coal, 1st 4s, Ser. A, 1940	75 1/2	
Burns Brothers, Pfd.	(BB)	100		115	Colorado Fuel & Iron, Gen. 5s, 1945	91	92
Central Coal & Coke, Com.	(CK)	55			Colorado Indus. 1st Mtg. & Col. Tr. 5s, 1934	76 1/2	79
Central Coal & Coke, Pfd.	(CK)	63			Consolidation Coal of Maryland, 1st Ref. 5s, 1950	83	88
Colorado Fuel & Iron, Com.	(CF)	43		44	Jefferson & Clearfield Coal & Iron, Sec. Mort. 5s, 1926	96	
Colorado Fuel & Iron, Pfd.	(CF)			125	Lehigh Valley Coal, 1st Gtd. 5s, 1935	99 1/2	100
Consolidation Coal of Maryland	(CGM)	75			Lehigh Valley Coal, Gtd. Int. Red. to 4 1/2, 1915	74	
Elk Horn Coal, Com.	(EH)	36		37	Lehigh Val. Coal & Nav. Con. S. F., 4 1/2s, Ser. A, 1934	90	
Elk Horn Coal, Pfd.	(EH)	41		47	Pleasant Valley Coal, 1st S. F., 5s, 1928	80 1/2	83 1/2
Inland Creek Coal, Com.	(ICR)	39			Pocahontas Coal & Coke, Joint 4s, 1941	83	85
Inland Creek Coal, Pfd.	(ICR)	75			Pocahontas Con. Collieries, 1st S. F., 1957	83	
Jefferson & Clearfield Coal & Iron, Pfd.	(JF)	63			Roch. & Pitta. Coal & Ir. Helvetia Pur. Money 5s, 1946	90	
New Central Coal of West Va.	(NCC)	5			St. L., Rocky Mnt. & Pac. Stamped 5s, 1955		89 1/2
Pittsburgh Coal, Com.	(PC)	63		63 1/2	Tenn. Coal, Iron & R.R., Gen. 5s, 1951	87	
Pittsburgh Coal, Pfd.	(PC)	92		96 1/2	Utah Fuel, 1st Sinking Fund 5s, 1931	55	70
Pond Creek Coal	(PD)	17		18	Victor Fuel, 1st Mtg. Sinking Fund 5s, 1953	84	85 1/2
Virginia Iron, Coal & Coke	(VK)	58		61	Virginia Iron, Coal & Coke 1st 5s, 1949		